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# THE JOURNAL OF PHILOSOPHY

'OL. XXIX. No. 1: JANUARY 7, 1932

स्थाक प्रमाणीकरण १२

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# THE JOURNAL OF PHILOSOPHY

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FREDERICK J. E. WOODBRIDGE,
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THE JOURNAL OF PHILOSOPHY

# REASON AND NATURE: THE METAPHYSICS OF SCIENTIFIC METHOD

MORRIS R. Cohen's *Reason and Nature*[1] is one of the few significant American works on philosophy published in modern times which is neither American, modern, nor technically philosophical. And yet it bears the unmistakable imprint of the age in which it has been produced. For its fundamental tenets have been developed in opposition to the dogmas of our dominant philosophies. It is no accident that the two names cited most frequently in the book are Aristotle and Newton. They symbolize Professor Cohen's faculty for bringing to bear the insights of the great thinkers of the past upon present philosophic issues and tendencies. He has been able to iron out with neatness and precision the latest wrinkles in philosophical terminology and reveal beneath them the familiar faces of the traditional problems. It is the emphasis and elaboration upon fundamental questions which knit *Reason and Nature* into a whole, which make the essays on mathematics, physics, biology, psychology, sociology, law, and ethics so excitingly relevant to the analysis of the primary categories of metaphysics and logic. There is hardly a contemporary doctrine of influence in any field which is not discussed in relation to Professor Cohen's own philosophical position and which is not illuminated by his searching criticisms.

Not only is this book an intellectual document of its times; it is a human document of dramatic significance. It is the outcome of a quest for an ordered life in a disorderly age; an attempt to recast the ideal of harmonious integration in the face of contemporary cults of strenuosity and impulse. It is a personal challenge—one, as we shall see, not without its dangers—to the tyranny of the temporal in thinking and the social in living. The intensity of that challenge burns in the icy analysis of whatever is dynamic, progressive, and evolutionary in the modern outlook, in the unceremonious epithets used to characterize opposing doctrines, and in such phrases as "the charnel house of the actual" which suggest behind the skeptical, tolerant, and smiling intelligence a spirit acutely sensitive to the irremediable tragedies and cruelties of life. It contains no cheap

[1] Harcourt, Brace & Co., New York, 1931, pp. xxiv + 470.



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solutions to the problems it defines. There is a mixture of the lyrical and the rational in its resignation to existent imperfection and its devotion to what it conceives to be eternal ideals. The book expresses the philosophy of a man who has lived and is prepared to die—alone.

I

*Reason and Nature* is a book for many minds. Few will accept all of it. No reflective person will reject extensive portions of it. More than any other work I know, it succeeds in imparting large stores of valuable information while demanding at the same time that the reader clarify his own position with respect to the views and material presented. Every exposition, then, whether descriptive or evaluative, must to some extent be a confession of philosophic faith upon the part of the critic.

1. One of the most compelling aspects of this book is the detailed proofs it offers that philosophic issues are central to all the special disciplines. No more instructive experience is in store for hard-headed positivists who believe that philosophy is an esoteric cult, the primary purpose of which is to enable philosophers to live off the community, than to read what disastrously bad philosophy results from denying the relevance of philosophical analysis to the fundamental categories of the sciences. Professor Cohen shows how the worship of "the facts" of immediate experience which does not consider how those facts are reached and how they enter into a systematic connection with other things, culminates in doing violence to the actual deliverances of experience itself. He traces the baneful effects produced by the denial of the objectivity of universals or organizing relations not only upon our scientific theories in physics, biology, and psychology, but upon our social ethics and philosophy of value as well. He indicates how the belief in the dogma of nominalism that the universe consists of atomic sensations is at the basis of doctrines apparently so wide apart as conceptualism in mathematics, fictionalism in physics, reductive theories of introspection and behavior in psychology, and *laissez-faire* individualism in politics and law. With the same erudition and critical insight he goes on to expose the fallacies of those who accept the converse dogma that the organizing relations of things possess a higher reality than the things related, and who sometimes, as the various forms of social and political absolutism indicate, convert these relations into additional *things*. And throughout the whole discussion, Professor Cohen keeps up a running fire against both the appeal to sense by the current *Lebensphilosophie* and the appeal to reason by the official conservatism. The first involves an obscurantist mysticism too impatient to discriminate the way in which the world is

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actually put together; the second relies covertly upon the argument from authority and sometimes upon supernatural revelation.

2. Professor Cohen's conception of philosophy as both critical and integrative preserves him from losing himself in the wide but barren pastures of epistemology. He grants the relative *historical* justification of the problem, "How is knowledge in general possible" as a check upon the tendency of some philosophers to spin the world out of their innards; and recognizes in the traditional theories of knowledge an irrepressible and harmless expression of the play impulse in those who have outgrown the games of childhood. But his own concerns are preëminently with the concrete ways in which knowledge is acquired. He enforces the lesson already insisted upon in America by Peirce that ignorance of the subject-matter of the specific sciences, even when one has led an exemplary life as a teacher of the young, is no adequate basis of speculation about the nature of things. Professor Cohen's unmatched erudition, including as it does law as well as physics, mathematics as well as sociology, enables him to trace the way in which the larger issues of methodology emerge from definite problems, not out of arbitrary definitions of "the knower," "sense-datum," and "object of knowledge."

3. But what then, it may be asked, does *Reason and Nature* purport to be? What is its central theme and distinctive contribution? The answer is that it is an attempt to present the metaphysical presuppositions of scientific method. On the basis of its critical description of the procedure of the sciences, it seeks to explore those generic traits of existence which condition the possibility of both systematic construction and fruitful application. The metaphysics is not explicitly discussed because it is involved in the varied detail of all the subjects examined. Its intent, however, runs clearly counter to two powerful streams of thought. Some there are whose metaphysics, like the Hegelians, have been constructed largely on a religious, or social, or ethical foundation providing a basis from which science itself may be judged by something more inclusive and allegedly "higher." Others, like the positivists—a rapidly growing group in Europe and America—who swear a near-sighted allegiance to the findings of science, repudiate the possibility of any metaphysics whatsoever. Professor Cohen cuts under both groups by challenging the fundamental assumptions of the first, and forcing the second to draw the ultimate implications of their own position. He shows that the nature of scientific method involves the denial of the proposition that the universe constitutes one interdependent and systematic totality; and against those who seek logically to construct the world from atomic data, he argues that every entity "has a domain in which its true existence is beyond itself; to wit, the larger system of which it

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is a part.'' On the basis of this distinction Professor Cohen is able to explain what no philosophy of cosmic organicism can explain, viz., how piecemeal knowledge is true and reliable; and what no positivistic philosophy can explain, viz., how one item of piecemeal knowledge can lead us to another.

Here, then, is a scientific philosophy which is quite different from others recently promulgated under the same name in that it does not regard the history of philosophy as a colorful composition of error but seeks rather to build further upon the great, even if partial, insights of the past. Its analysis of the vagaries of contemporary philosophy contains no invocation to the unutterable and ineffable One to solve the antinomies of being and experience; while it avoids at the same time that variety of vicious formalism which operates on the maxim, ''When you have nothing more to say, convert, obvert or contrapose.''

4. If one were to ask, however, for the central doctrines of *Reason and Nature* he will find them in the principle of polarity and the principle of invariance. They constitute, so to speak, the metaphysical and logical warp and woof of his philosophy. They are involved in all existential patterns conditioning but not determining their successions. By deftly showing how they interplay in the chequered careers not only of things but of the doctrinal interpretations of things, Professor Cohen succeeds in giving the impression that he has effected a *synthesis* of conflicting traditional views from the standpoint of a definite system. It is a system which attempts to show how the relative and changing content of knowledge is unified by an absolute logical methodology necessarily isomorphic with primary metaphysical invariants.

The principle of polarity is based upon a sympathetic appreciation of the Hegelian doctrine of Essence. Every situation or existing entity involves mutually determining aspects which are irreducible to each other. All significant predication is based upon the recognition of correlative distinctions which it is the business of science precisely to *define,* not, as some think, to ignore. Categories which are taken as opposite and in strife with each other such as ''immediacy and mediation, unity and plurality, the fixed and the flux, the ideal and the real, the universal and particular, the actual and possible, etc., like the north and south poles of a magnet, all involve each other when applied to any significant entity.''

Stated barely in this way the principle of polarity can not avoid the appearance of the commonplace. But it is Professor Cohen's merit to have shown how a disregard of such metaphysical commonplaces leads to absurdities in thought and unreflective brutality and tyranny in practice. In detail and with arguments we need not

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here repeat, he surveys the major fields of knowledge for proof of his thesis. He maintains that most problems and difficulties arise from the conflict of the two polar tendencies of the human mind "to do justice to the fullness of the concrete case before us, and yet to grasp an underlying abstract universal principle which controls much more than the one case before us."

II

And yet the unmistakable impact of Professor Cohen's argument seems to line him up in almost every field decidedly with one of these two tendencies. In discussing the relative claims of the conflicting polar categories, he will invariably be found on the side of the party of order, invariance, eternity, mechanism, and resignation. In this *Reason and Nature* shows once more the sign of the times in which it was conceived and written. In opposing the excesses of some of the contemporary views which make the principles of variety, time, and activity central to philosophy, he leans so far backward that he seems to introduce an ontological separation between change and eternity, history and logic. At any rate the relationship between these polar categories is left essentially obscure.

1. The indeterminate character of Professor Cohen's analysis of the relation between time and eternity is revealed most clearly in his discussion of the nature of science. Scientific propositions differ from historical propositions in that they assert necessary and universal connections between things. The statement that all known examples of sulphur under ordinary atmospheric conditions have boiled at 125° C. is a proposition of history. But the statement, if anything is sulphur (defined by its atomic weight), then it will always melt at 125° C., is a proposition of theoretic science. Now when we inquire into the character of the necessity which scientific propositions possess, we discover that Professor Cohen is using the word "necessity" in a Pickwickian sense. For he admits that no propositions of science have *logical necessity;* otherwise we would be able to deduce them from the laws of logic. When we say that something has happened *because* something else is true, we are explaining one fact by subsuming it as a specific case under a wider class of happenings. We are going from one plane of *description* to another; the distinction is not between what exists in time and what is non-temporal, but between what exists at a specific time *t* and what exists for a whole series of relevant temporal instants. But Professor Cohen quite definitely suggests that propositions which state that "this piece of sulphur has melted at 125° C.," refer to an historical event; while the proposition which explains this (in answer to the question "why") by saying "*because* if any-

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thing is sulphur it will melt at 125° C." refers to what is outside of history. Propositions of theoretic science, he tells us, belong to the "eternal present."

That there is a distinction between these two types of propositions I do not deny. But it seems to me questionable that the distinction is the one which Professor Cohen draws. For it is certainly not a distinction in necessity; there is no more logical reason why whatever is sulphur should melt at 125° C. than that this piece of sulphur should. The truth of the first proposition implies ultimately that this and that and every other piece of sulphur which has existed and will exist, has melted (could have melted) and will melt at 125° C. It is not only a description but a *prediction*. Professor Cohen first speaks of physical necessity as if it meant merely a wider range of applicability, but when he contrasts laws with the specific events in time *of which* they are the laws, he shifts to another conception of necessity, converting what endures throughout time into something eternal. It is one thing to say that the equations of physics are relatively independent of the specific temporal and spatial locations of events; it is another to say that they are independent of the time process as such. If Professor Cohen is interested in calling attention to the fact that a true description of any event or situation must express its invariant character, then the distinction between the historical and the eternal is no longer relevant; for once propositions of history are dated they are always true. "Socrates *was* mortal" will remain true even if the time comes when the proposition, "if anyone is a man, he is mortal," will be false.

What does it mean to say that propositions of theoretic science must be of the "eternal present"? The past and future are presumably as much the locus of eternity as the present. It would follow, then, that the simplest scientific law, such as the melting point of sulphur is 125° C., states a relationship which *is* true, *has* been true, and *will* be true. But how could we know this unless the world were over and done with? The metaphysical assumption behind propositions of this type is that there is a limited and fixed number of substantial kinds which have invariant qualities and relations. That there must be a limited number of natural kinds for science to be possible may perhaps be true. But it does not follow from this that there can be no change either in the character of these kinds or in their number.

Professor Cohen claims that what distinguishes the necessary laws of science from empirical uniformities of succession is the presence of an element of *identity* between the antecedent and consequent. "When we find such elements of identity we have real connection and a basis for necessary relations" (p. 104). The point

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is so obscurely stated that I am not sure I understand it. But two things seem clear. The identity is discovered *after* the event has taken place and is irrelevant to the distinction made between the antecedent and consequent. And even where an element of identity has been established in any specific case (is not this always an empirical matter?), there is nothing *logically* necessary involved in the persistence of the same relationship from one moment of time to another.

2. Another consequence of weighting the principle of polarity in favor of whatever is invariant and non-temporal is that Professor Cohen unwittingly gives a misleading account of those who to-day espouse the philosophy of critical naturalism and dialectical materialism—those for whom experiment is more important than tradition. He tries to make it appear that they reject all the categories of order and invariance, something which is not only logically self-defeating, but actually impossible in practice for human beings to do. He does not see that they try to *redefine* invariance in terms of change, tradition out of experiment, social stability out of revolution; that they do not reject what can not be rejected, but seek to discover in fresh activity whether the old invariant—or what is alleged to be invariant—holds. This does not mean that the order of nature changes with the order of our discoveries. But it does mean that the order of nature is not once and for all time fixed by Platonic decree. Something remains constant but no one can say in advance *what* it will be. These remarks are not intended as a defence of the vagaries of men like Bergson, Simmel, James, Vaihinger, and other philosophers of gush and go. But despite the genuine dangers which flow from their subjectivism, irrationalism, and nominalism, their emphasis upon the category of novelty, after it has been sobered by criticism, is less harmful to the rational development of science and society to-day, than the counter-emphasis on invariance. It is true but not very illuminating to be told that in the last analysis *something* must be invariant in existence, though aside from the propositions of logic no one can tell us what they are. Sooner or later it is inevitable that the traditional expressions of the principle of invariance be regarded as final, and operate to rule out the need for further growth and experiment.

3. Let us look at the principle of invariance a little more closely. In places it is called the principle of identity. Identity seems to suggest the "abstract sameness" of formal rationalism. This, Professor Cohen clearly disavows. In virtue of the principle of polarity, his principle of invariance involves the existence of variety and difference. An invariant consists "of a certain constant pattern of relations embodied in different aspects." It is the unity *of* difference and must exhibit itself *in* difference.

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Now the phrase "unity (or invariance) in difference" is clearly ambiguous. It may refer either to the abstract universal which is shared by many particulars or to the systematic nature of any entity as it is revealed in its multifarious aspects. The quality of whiteness, for example, is not invariant in the class of all possible white things in the same way as, say, the systematic nature of the solar system is invariant in all of its parts. One represents the unity of an isolated character, the other the unity of a system. Nowhere does Professor Cohen explicitly differentiate between these two types of logical structure and indicate which one he identifies with the principle of invariance. Nor is it clear whether he regards one as a special case of the other. But it is safe to assume from his discussion of the nature of system and his statement that "the nature of a thing is the group of its invariant characters" (p. 157) that by the phrase "invariance in diversity," he means the second type of unity in difference.

If the principle of unity or invariance becomes significant only as it is revealed as a constant pattern which holds for many things (or aspects), then it follows that the greater the range of the different things examined, the more often are we compelled to *reinterpret* the nature and significance of that unity. It is a unity in virtue of its differences. And where we are dealing with physical or social subject-matter in which time enters constitutively, we can never finally say *this* or *that* is invariant, for the principle of invariance as distinct from bare identity is never independent of any or all of its possible exemplifications. The invariants of one relatively isolated system may turn out to be the variables of another. But the genuine naturalist can not assume that there is one systematic interrelated whole which includes everything that is or can possibly be unless he denies the existence of genuine novelty or time. So long as he does not abandon a working logic for a compensatory poetry, he can not even make the absolute totality a subject of significant predication, and must content himself with a series of totalities or systems out of whose temporal interrelations he formulates a relative and tentative methodological principle of invariance.

There is little in *Reason and Nature* which is incompatible with this position. Indeed, Professor Cohen argues for it in attacking philosophies of "vicious organicism" which make knowledge of everything the presupposition of true knowledge of anything. Yet he himself by underestimating the way in which time enters as a principle of discontinuity and presenting the goal of scientific method as if it were a quest for an absolute invariant, comes dangerously close to the very ontological absolutism he elsewhere opposes.

> The totality of nature through all space and time is a limit which we can never attain and yet the idea of it is a necessity of scientific method.

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completed rational system having nothing outside of it nor any possible alternative to it, is both presupposed and beyond the actual attainment of any one moment. It coincides in part with the Bradleyan Absolute but it is an ideal limit rather than an actual experience. Unrealized possibilities are within it precisely to the extent that it contains endless time [page 158].

Professor Cohen can not mean that "the absolute totality of nature" functions as a regulative or heuristic idea in extending our knowledge. For how can "a completed rational system having nothing outside of it nor any possible alternative to it" be regarded as the necessary presupposition of scientific inquiry when he himself tells us that "to hold seriously . . . that everything is connected with everything else would make the scientific search for determinate connection meaningless" (p. 151)? He must assert his Absolute, therefore, not as a methodological expedient, but as an ontological existent.

What is the evidence offered for its existence even as an ideal limit? So far as I can see, only the unsubstantiated claim that it is a necessity of scientific method. As one who believes that there is an ontological ground for methodological fruitfulness, I am willing to grant that if Professor Cohen could prove that "the absolute totality of nature, etc." was a necessary presupposition of scientific method, he would have established its existence. In that case it would be at least as valid as any of the propositions which necessitated it. But all he has proved is that scientific method necessarily operates with relatively isolated totalit*ies* and not with the "blooming Absolute." To admit that there is *always something more* outside of a totality which makes our knowledge incomplete is not the same thing as saying that the more in question is matter for knowledge and, if matter for knowledge, that it is necessarily assimilable within one "completed rational system." Systems of knowledge may exist, say, of psychology or economics, which are demonstrably underivable from systems of physics, although compatible with them. There are different types of unity in the world; and I can not see that the unity of all unities—a concept hopelessly ridden with logical difficulties—is at all necessarily involved, even as a limit or heuristic principle, in actual scientific procedure.

It is with the principle of invariance as it is with the principle of truth. Whoever asserts that nothing is invariant in the world is in the same logical position as he who asserts that nothing is true. Such statements make no sense since if knowledge of some truth is necessary for any significant denial, there can be no denial of all truth. Similarly whoever denies the existence of one invariant must fall back upon the affirmation of another. A world in which nothing were true or invariant would be a world in which there could be no knowledge—not even that the world were of such a kind. But

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the crucial question is whether or not there are any *specific* truths or invariants, aside from the laws of logic, beyond the possibility of significant doubt. What I find ambiguous about Professor Cohen's theory of the invariant is that he seems to go from the proposition that there are logical invariants in nature to the propositions that the fundamental laws of nature can not intelligibly be regarded as having had temporal careers, and that all laws are in some way part of a "completed rational system having nothing outside of it nor any possible alternative to it." It may be a postulate of scientific inquiry that the laws of nature never change and that the only change which takes place is in our knowledge of them. But I deny that this postulate is metaphysically necessary and that we can wring certainty about the natural world from our methodological predicament. And as for the existence of "the completed rational system"—it can not even be a postulate unless we define a postulate, with Peirce, as "something we hope to be true."

4. In Professor Cohen's philosophy there are two definite strands—naturalism and idealism. They are woven skillfully together but on certain fundamental metaphysical questions such as the relation of meaning and existence, logical form and temporal change, he seems to me to surrender, or at least seriously compromise, his naturalism. We have seen with what dangerous coquetry he has approached the Hegelian absolute. Only his profound sense of the contingent and unpredictable aspects of experience has saved him from falling into its arms. He will have none of the block-universe. But his systematic disregard of the pervasive temporal character of existence leads him to make the domain of abstract possibility the ontological locus of the discontinuous and novel. This shuttling back and forth between Hegelian and Platonic idealism introduces an even greater ambiguity in his naturalism—an ambiguity reflected in his theory of possibility. For he seems to expound two conflicting views. On the one hand, the doctrine that all possibility is a possibility of the one existing world in space and time; and on the other hand, the doctrine, reiterated more frequently, that the existing world is only one possibility of an infinite number of others. The laws of logic, he says, although they hold for nature, are much wider than nature. They are invariant for all possible being and all possible meaning. Pure mathematics constitutes a realm of antecedently subsisting meanings which may, but need not, have exemplifications in existence. It is this second view which Professor Cohen must own (although he asserts both) to make *Reason and Nature* consistent. Its kinship is with Plato and Leibnitz, not with Aristotle and Hegel.

Professor Cohen's argument for this view is two-fold. (*a*) He

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claims that the very nature of scientific hypothesis is such that it must assume that the world is in some way different from what it is. Even false hypotheses are sometimes fruitful. (*b*) He points to the fact that the ideal entities of physics, rigid bodies and frictionless engines, as well as the circles and triangles of mathematics, have no spatio-temporal existence at all.

(*a*) The first argument, however, is easily met by showing that the hypothesis which assumes that the world is in some respect different from what it is, can only be intelligible and fruitful because it transfers the actually observed relational pattern of some *other* aspect of the world to the problem in question. It is a process of extrapolation. Even the most fanciful conception reduces itself to a re-arrangement of elements which at one time have been actually experienced. The crucial question is whether or not the projected re-arrangement is a consistent or meaningful one. What is to decide if it is not the exemplified structure or behavior of things? And if it is, must we not draw the corollary that the test of the consistency of every possible hypothesis—yes, of its very *intelligibility*—is ultimately the exhibition of some determinate existence or of some *determinate set of operations* and not, as Professor Cohen seems to assume, direct intellectual insight, inspection or immediate apprehension? At most Professor Cohen's theory of meaning can tell us that an hypothesis is impossible because self-contradictory. It can not assure us of its consistency except by showing that it is in some way *grounded* in existence. Ungrounded possibilities may turn out to be nonsense syllables.

(*b*) To the second argument Professor Cohen himself suggests an answer. The ideal concepts of science may be defined as the ordering principle of a class of certain existents which are related to one another in a certain way. For example, the ideal of perfect rigidity in physics may be viewed as the "ordering principle" of a series of objects ranged in respect to increasing or decreasing rigidity (p. 105). But here, too, Professor Cohen falls into an ambiguity which makes it difficult to ascertain whether he is reverting to a naturalistic position or not. For he speaks as if perfect rigidity were a "limit," an end term towards which the series approaches. In fact he employs the two expressions "ordering principle" and "limit" as if they were synonyms, as when he says in another but allied connection, that "eternity may be viewed as the limit or ordering principle of a series of expanding vistas" (p. 156). Now it is clear to me that a "limit" and an "ordering principle" are not the same things. For the "ordering principle" is the logical relationship between the existential series itself, while the limit, if it is at all involved in the series, is distinct from

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all the other terms. It is an additional term. Given the series we need a *proof* of the existence of the limit (except in series in which the limit is already given). But there can be no series at all unless the ordering principle is given together with it. I can arrange all fat men in an order of increasing fatness: but does Professor Cohen mean to imply that the series approaches one perfectly fat man as a limit?

5. This persistent metaphysical ambiguity finds clear expression in Professor Cohen's discussion of the nature of mathematics where it is concealed, however, by an irrelevant and question-begging distinction between pure and applied mathematics. He presents his informative discussion of the fact that in the realm of mathematics we have "absolute *a priori* truth" which is constantly being applied to existence, by attempting to solve the following inconsistent triad: "(1) The propositions of mathematics deal with the material world. (2) Material propositions are not necessary truths. (3) The propositions of mathematics are necessary truths" (p. 172). The truth of any two of these propositions is inconsistent with the third, and yet none of them can be plausibly denied. The triad is resolved, claims Professor Cohen, by distinguishing between "applied" mathematics and "pure" and noting that in the first proposition the reference is to "applied," and in the third, to "pure." With these qualifications the truth of any two propositions is consistent with the third.

But now, suppose we ask about what do the propositions of pure mathematics (or logic) give us necessary truth? Professor Cohen categorically states that they are categorically true of everything actual or conceivable, in short, of the entire realm of possibility. Consequently pure mathematics or logic gives us categorically true propositions of the existing world, since the existing world is included within the possible world. The existing world itself, or some aspect of it, is logical. That is why logic can be applied to it. Professor Cohen himself is emphatic about this (p. 204). It follows, however, that if this be so some material propositions are necessary and *a priori* truths which Professor Cohen denies in the second statement of his triad. Despite his distinction he is still committed to the following inconsistent triad: (1) The propositions of pure mathematics are necessarily true. (2) No material propositions are necessarily true. (3) At least some propositions of pure mathematics (tautologies, or analytic propositions) are materially true. The truth of any two implies the opposite of the third. The distinction between pure and applied mathematics is irrelevant to the discussion of the ontological character of logic because applied mathematics can validly hold of existence only in so far as pure mathematics does. The real problem is, how does *pure* mathematics apply

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and to what does it apply? For if it does not apply to anything, what does it mean to say that it gives us truth and not merely tautologies? The distinction is question-begging because in making the formal characters of existence the objective reference of propositions of pure mathematics, and the material characters of existence the objective reference of applied mathematics, Professor Cohen straightway identifies what is formal with the eternal and what is material with the temporal.

The position of a naturalistic theory of mathematics and logic toward the difficulties Professor Cohen so ably raises can not be developed here. But it would attempt to come to grips with the central problem of consistency which Professor Cohen just skirts in his discussion of Brouwer. "And why is not mere possibility or freedom from contradiction sufficient for pure mathematics?" he asks (p. 191). Because, we may respond, there is another question to be answered first, a question which Professor Cohen himself raises in an earlier connection. "If the meaning of our assumptions is to be found in all their possible deductions, the full recognition of which is an interminable task, what proof have we that the future will not reveal an implicit contradiction between some of our assumptions?" (p. 112). Pure logic has its assumptions as well as physics. And if the laws of logic are also laws of existence (p. 203), is not the statement that we know by intellectual insight that they must be externally true equivalent to saying that the *laws of existence* (or at least some of them) must be eternally true? And is not this opening the back-door to that variety of rationalism which attempts to *deduce* what existence *must* be? May not the apparent indubitability of logical invariants, as Professor Cohen suggests, be "relative to our human need to understand"? Is nature definitely and forever determmined by it?

## III

The incidence of this philosophy of invariance is best revealed in the discussion of the nature of standards and their relation to human experience.[2] Here the meaning of the term "reason" shifts from the

[2] Professor Cohen is impatient with those who use the word "experience" to denote the processes of interaction between nature and society, society and man, etc., on the ground that "it is humanly impossible to use an old term with a new meaning" (p. 42). Yet he himself persists in calling himself not only a naturalist, but also a *mystic* in the sense that he believes that "all words point to a realm of being deeper and wider than the words themselves." In this sense of the word all sane people would be mystics; and the word would have a meaning which Professor Cohen surely knows is not *distinctive* of the traditional mysticism associated either with the Hindus, or Plotinus, or Tauler, Eckhart, Underhill, etc. Why the term? Is it not hopelessly pervaded with a religious and obscurantist flavor?

And as for the meaning of experience, Professor Cohen is mistaken in be-

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principle of invariance to the principle of reflection. The attempt made by critical naturalism to show how, without calling the validity of logic into question, normative prescriptions arise from the necessity of controlling the experimental procedure, is dismissed as irrelevant to the nature of logic. Standards can not arise in the course of experiment. They must have existed, Profesosr Cohen holds, before they were discovered. A naturalist does not have to deny this, providing he does not lose sight of the time-coëfficients involved. But he denies that standards exist *as* standards outside of the contexts in which they function. For him existence is as existence does. And if in discovering what it does certain methodological invariants appear, he will grant the presence of relatively isomorphic metaphysical structures. In order to distinguish, however, between logic and the metaphysics upon which it is grounded, he claims that the logical characters become explicit only in inquiry where they function as checks and guides. Structures are not yet standards. They become standards as they enter into discourse and experience. In discussing the way standards emerge in the processes of knowledge, he must treat of the interrelation between the rational aspect of experience and the practical, emotional, and sensory. Professor Cohen admits that all human experience functions with both sense and reason (p. 197). But he does not tell us how they are connected, and impatiently dismisses as mere psychology the efforts of some philosophers of "life and experience" to show how cognitive experience mediates between other forms of experience. Such questions he regards as irrelevant to any philosophic issue of moment. The result is that he leaves unclear whether or not (and where and

lieving that the issue between him and modern philosophies of experience is whether experience is to be used in a restricted or all-inclusive sense. The real issue is not a question of lexicography but of the ontological character of experience, especially cognitive experience. For Professor Cohen experience is a subjective affair which merely reveals an antecedently existing knowledge relation. The only change which takes place is a change in the degree of the knower's ignorance. For philosophers of experience (e.g., Professor Dewey) experience is an objective *interacting* process between things and a certain type of behavior defined as consciousness. Since the character of experience is interactive, the task of an empirical metaphysics is to ask what specific differences occur to different things as a result of their being experienced. Not all objects are affected the same way when they become objects of experience. In the experience of a star or a past event the only perceptible or overt change may be a change in *our* behavior; the experience of other objects or human beings may result in a change in *their* behavior as well. The refusal to do justice to the active character of experience and the objective character of its effects is due to the acceptance of the traditional psychology according to which experience is something purely mental.

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when) he believes standards can develop, and what it is in terms of which they are subject to criticism.[3]

Now if in his opposition to those who believe that standards have temporal careers and are subject to the test of consequences, all Professor Cohen means to assert is that at any given moment there must be standards, that there must be something immediate to which we appeal, there is no issue between us. But if he means that this immediate something is final, ultimate, and unchangeable the answer depends upon the kind of subject-matter we are talking about. Outside of the domain of logic where he does attach a kind of metaphysical ultimacy to the principle of invariance, I confess myself puzzled as to what it is he really does believe. But there is nothing at all puzzling about the tone, method, and spirit of the discussion as it applies to other fields. For he definitely suggests that those who believe in the development of new standards have no standards at all. Throughout the book and in an unfortunate appendix entitled "In Dispraise of Life, Experience and Reality" he distorts the position of those who believe that in the life of man novelty and change are genuine values among others by interpreting it to mean that they are the *only* values and *always* values. His arguments for "not life as such but the good life" owe a great deal of their force to the fact that the views with which they are contrasted are so stated as to make them appear to be obvious nonsense. For example, he distinguishes his own position from "those who will not hear of any change and those who think that *any* change is necessarily good (because they identify change with life)."[4] I can not see that any contemporary doctrine of importance is justly characterized in this facile antithesis. It permits philosophers of "life and experience" to suggest that this unsympathetic statement of their views is Professor Cohen's way of saying that those who have standards different from his own have none at all; and that his own "are out of touch with everything modern and useful" (xiii).

[3] By critical naturalism I mean a type of philosophy which finds its best illustration in the later work of Dewey and in the early work of Peirce. The latter concludes his "Essay on Probable Inference" in *Johns Hopkins Studies in Logic* (1882) with the significant sentence: "Side by side, then, with the well established proposition that all knowledge is based on experience, and that science is only advanced by the experimental verifications of theories, we have to place this other equally important truth, that all human knowledge up to the highest flights of science, is but the development of our inborn animal instincts." This position is developed even more explicitly in earlier essays, collected and published in *Chance, Love and Logic* (1923) edited by M. R. Cohen.

[4] Italics and parenthesis in original, p. 26. Even if there are any philosophers who identify bare change with life (no citation is given) there is at least one change they can not regard as good, viz., death, so that even *they* have standards.

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We need not argue the point again that the law of polarity can only tell us that life without standards is impossible, but not what those standards are, have been, or will be. There is no logical impossibility involved in believing that the standards of good speech and correct usage have originally developed out of the grunts and growls of early man, and then have progressively been modified in social intercourse and tradition. On the contrary, Professor Cohen would characterize as metaphysical perversity the attempt to convert the standards of language and good usage into antecedent and eternally subsistent conditions of language (whatever that may mean). Nor is the situation any different when once the allowance has been made for specific categories and time-spans in other fields like law, ethics, literature, etc. The very use of standards indicates that in some sense they are continuous with the subject-matter examined. They are, as far as our individual life-histories are concerned, a part of the subject-matter. To deny this would imply that standards in the social and historical realms were necessary and *a priori*, the error of the Neo-Kantians and one which Professor Cohen incisively criticizes.

But once more the emphasis which Professor Cohen gives to the principle of invariance in the social sciences brings him closer to the traditional rationalism than to critical historical naturalism. Invariants are sometimes referred to as the material rules of behavior which have justified themselves as human values over comparatively long stretches, and sometimes as the formal laws of logic. "It is equally illusory to suppose that a humanly desirable life can be lived without rules to regulate it or without the recognition of invariant laws or relations on which these rules must be based" (p. 437). Which rules? To say that they must be based upon a recognition of invariant laws or relations does not tell us anything about the *specific* character of the rules of the humanly desirable life, for all rules, whether they be rules of traffic, football, law, or poker, must be based upon invariant relations. To emphasize the importance of invariant methodological relations in law and ethics is to gloss over with a half-truth the fundamental issue at the basis of the whole question of human standards, viz., whether the good is to be defined in terms of human desire, so that as reflective desire changes, the good changes (the definition remaining constant); or whether it is to be defined in terms of the realistic or intuitionalistic theory of absolute, intrinsic, and eternal goods.

On the first point of view one would have to hold that ethics, although its values are autonomous, is essentially a socio-psychological science, that it consists in clarifying our desires, tracing their interrelationships, discovering the conditions under which they arise

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and the consequences they effect. I do not know whether Professor Cohen would regard this as the legitimate field of ethical theory; but I am glad to note an approximation to this view in his own identification of value with *validity,* his refusal to regard ends as final goods, and his belief that the proper task of ethics is exhausted in the construction of a theory of necessary *means* (p. 446). In transferring the normative element in ethics from ends to the instrumentalities by which ends are tested and achieved, Professor Cohen seems to be agreeing with the experimental theory of morals. But he goes on to the development of a dialectical ethics, on the analogy of non-Euclidean geometries, which suggests that this agreement is more apparent than real. The same act, we are told, may be right from one set of assumptions and wrong from another. Is incendiarism wrong? That depends. If my set of assumptions is esthetic, then the glare of bright red flame against an autumn sky may be the most appropriate means of satisfying it; if my set of assumptions is humanitarian, then no esthetic spectacle, not even the conflagration of Rome, would be justifiable. And what if, as is always the case, my set of assumptions is both esthetic and humanitarian? Here Professor Cohen stops before the inevitable aporias of the ethical life with the bare suggestion that we must construct a hierarchy of values. But certain questions clamor to be answered. Is there any other way of discovering *the ordering principle* of this hierarchy except by measuring the intensity of human desires after reflection (logic) has shown us to what they commit us? Are not human desires conditioned by the psycho-sociological milieu so that as it changes the hierarchy of ethical values changes? Is there any single consideration which guides the *action* by which human beings *resolve* ethical antinomies, above the test of consequences? Our unattainable ideals —are they ideals because they are unattainable or because, *although* they are unattainable, the consequences of acting upon them produce more satisfactory results of a verifiable nature, than not? No one can hew an absolutely straight course on the ocean; nor for that matter a circular one. Why do we adopt the first one as our ideal?

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Professor Cohen maintains that the essence of the romantic use of the terms "life" and "experience" is that it avoids the irksome task of defining the good (p. 457). I have looked hard for a definition of the good on the basis of the non-romantic use of the term "reason." All I have been able to find is a partial enumeration of the ends which Profesor Cohen regards as worthy or unworthy of attainment. Among the former are the quest for truth, security, and contemplation. Among the latter are all things modern and useful. But here too I note an important omission. Ends are to be judged by the means necessary to realize them. The means are in a

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sense part of the end (p. 446). Are we not, therefore, entitled to ask Professor Cohen to indicate some program of resolute and enlightened *social action* by which his ends are to be furthered and achieved? We shall then be able to tell not only what these values commit us to, and what other values they exclude, but whether they are conceived to be purely personal, or class, or universal values. It is not calling upon a philosopher to be merely a social reformer when it is pointed out that all truthful and courageous assertion of desirable ends demands at some point concern with a method of action to realize them. I can not understand, therefore, Professor Cohen's continued insistence that where action begins philosophy ends, except as an expression of his own personal preferences. The philosopher, it seems to me, is to be recognized by the reflective character of his action, whatever that action may be, and not merely by his fondness for revery.[5]

For the moment I wish to point out that the broader implications of this emphasis on the categories of invariance in the social sciences are innocent enough. Especially if they mean no more than that our

[5] This does not mean that the philosopher must desert his own special tasks and plunge into the mêlée of social life in order to improve the world any more than the general staff of an army must man the trench guns. But it is saying that the *division of labor* between the pure economist and applied, the pure physicist and applied, the pure philosopher and applied does not express a separation of interests but a temporary and shifting distinction within a common circle of activity. The philosopher's task may be defined as the pursuit of truth. But in social matters the pursuit of truth may involve fundamental social action. The analogy with the rôle of experimental activity in physics is obvious. The difference, of course, lies in the overwhelming importance of values in the social field and in that disinterestedness about fundamental values is not possible to creatures who are born human. I can not see that a concern with the practical means which are necessary to realize certain social ends makes a man any less a philosopher than concern with technological apparatus makes a man any less a physicist. Due to perverse misunderstanding it seems necessary to point out that the contention of some philosophers of experience that philosophy would do well to abandon its technical problems refers only to those problems which are *Scheinprobleme*, and which can not be stated intelligibly in their own terms, and not, as is often implied, to those problems which have no immediate human interest. The whole purport of their criticism is that social problems are just as relevant to philosophy (although they are of a different kind and demand another method of analysis and action) as physical problems; and that a reflective theory of ends entails a theory of means. Whether one seeks to realize certain ends rather than others does not depend upon the kind of a philosopher one is but upon the kind of man one is. To insinuate that those who are interested in forms of activity other than contemplation are not philosophers, is to rule out from the philosophic tradition a long line of thinkers from Plato to Leibnitz (not to mention the living) and is achieved by first forgetting that the contemplative life is itself a definite kind of human activity which has specific social effects, and then assuming dogmatically that any activity which is not contemplative is unreflective. These matters, however, are not to be settled solely by definition.

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ethical and social insights are to be submitted to rigorous logic. But the great danger has always been that the emphasis on formal logic gradually degenerates into a barren logomachy in which the specific and variable categories of law, ethics, and sociology disappear in propositional functions that hold in all possible worlds. Already in the philosophy of law opposition to contemporary efforts to liberalize theory and practice is making itself felt because of a misconception of the sense in which logic is formal. Although Professor Cohen is not responsible for the way in which his name has in this connection been invoked, it is an object lesson of what the consequences of a too emphatic disregard of the temporal factor are. That which is specifically invariant to law arises not from logic but from certain persistent social patterns of behavior; only empirical analysis can reveal whether such invariants exist, their extent and scope.

## IV

I have selected these questions for discussion because I think they are fundamental. That in emphasizing them I have run the risk of attributing to Professor Cohen views he does not hold, no one can be more sensitive than I. But they express the doubts and difficulties which have crystallized out of a serious attempt to discover whether he can make metaphysical ends meet in his system. Perhaps they are eloquent signs of my confusion. If so, the only excuse I can offer is that there is sufficient ground for it in the ambiguities of *Reason and Nature*. If I can induce Professor Cohen to state his position clearly on the fundamental issues I have raised my purpose will have been achieved.

Without an insight into Profesosr Cohen's values I do not believe we can understand the dark corners of his philosophy. He is impatient with all that is unformed, undeveloped, and romantic—with everything which obscures its vision by impulsive over-exaggeration. He is skeptical to large claims, cautious in his belief, and sober in his faith. Viewing the evils of to-day, because they are known, as more tolerable than the evils of to-morrow, he refuses to preach any gospel of social salvation. But he disdains, however, even more vigorously, the rôle of apologist. Life at most is a fickle second-best. It can be made more secure and free by cultivating an element of resignation to the inescapable tragedies of frustration and suffering. For Professor Cohen dignity is to be found in the renunciations of narrow emotional egoism; serenity in the simple devotions of friendship; intensity in the fearless pursuit of truth. A sense of humor to strengthen us in our contacts with the prosaic and trivial, an intellectual humility before the great streams of tradition, and a cosmic piety for the illimitable sources of our being are the spiritual pillars of the good life.

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These must command the respect of all who are capable of being stirred by high ideals. It is not what they say which makes them seem inadequate to me, but what they leave unsaid. Would there were added to them a sense of adventure in converting the merely natural into something reasonable; a feeling for the poetry of emotion; a joy in attaining novel effects from the old and familiar; a sympathy which suffers preliminary error for the sake of a deeper insight; a zest in crusades against remediable evils; an even greater sensitiveness to the smug cruelties of tradition and privilege, and finally, a willingness to go down to defeat risking something in action for what we hold most dear. There is, of course, an inarbitrable personal element involved in the choice of these values; they are not meant to exclude the first group of values but only to set them in a wider context.

There is genuine nobility in a life dedicated to keeping the sacred flame of truth alive in a world interested in something else, and in strengthening the floodgates against the tumult and chaos which surge outside the many-mansioned temples and ordered walks of divine philosophy. But there are times in world history when it is even nobler—in the interests of truth as well as in the interests of man—to abandon the side of the angels and follow the banner of Lucifer.

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## BOOK REVIEWS

*History of Greek Philosophy.* B. A. G. FULLER. New York: Henry Holt & Co. Vol. I (*Thales to Democritus*), xii + 290 pp., 1925. Vol. II (*The Sophists, Socrates, Plato*), x + 493 pp., 1931. Vol. III (*Aristotle*), i + 372 pp., 1931.

The first volume opens with a chapter of eighteen pages entitled "What is Philosophy?" and ending with a paragraph on the history of philosophy; it is written from a general viewpoint, without particular reference to things Greek. The introduction to Greek Philosophy comes in the second chapter, on "Greek Religion," in eleven sections and a total of fifty-seven pages. Then follow chapters on "The School of Miletus, the First Philosophers," "Pythagoras and the Pythagoreans," "Heraclitus," "The Eleatic School" (Xenophanes, Parmenides, Zeno, Melissus), "The Pluralists" (Empedocles, Anaxagoras, Leucippus, Democritus), and a "Summary." There is an appendix containing a chronological table of Greek History from 3000 to 399 B.C., and simple bibliographies on Greek Re-

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ligion and on Greek Philosophy. Eight pages at the end are given to a fairly good index.

The second volume, the longest of the three, starts with chapters on "The Sophists," "Socrates," "The Megarics, Cynics, and Cyrenaics"; and the remainder is devoted to Plato. After an introduction on his Life and Times, the approach to his philosophy is made in a chapter called "Platonic Love." The usual subjects are then treated, and the last three headings are "The Ideas as Mathematical Formulæ," "God and Matter," and "Plato's Later Political Theory." The book ends with a chronological table, brief bibliographies, and an index.

The third volume deals entirely with Aristotle's life and thought. The philosophical approach is made through the fragments of the earliest writings (the *Eudemus* and the *Protrepticus*) straight into the criticism of the Platonic Forms, and the doctrine of substance with its manifold ramifications. The rest of the book covers the Aristotelian philosophy, and there is a chronological table, bibliography, and index.

The work is pointed toward general readers and introductory courses in the History of Philosophy. There is therefore no attempt at original scholarship, and the author says: "The sources have been before me, but I have tried to rely entirely upon the interpretation of them given by such historians as, for instance, Zeller, Gomperz, and Professor Burnet. I do not see that at the present time anything new can be said, except by experts, and it has been my aim merely to rehash in a lighter and more easily digested form what they have already thrashed out and prepared" (Vol. I, p. x). "It has been written, even to the point of plagiarism, out of the general histories and the more specialized discussions already available" (Vol. II, p. ix). The "lighter and more easily digested form" is due to a feeling "that philosophy is not really the impossibly abstract, abstruse, cold, and difficult thing of the popular imagination, but rather something essentially warm, close, nay, clinging to everyday life, highly colored, melodramatic, and naturally provocative and engrossing" (Vol. I, p. x).

A work so conceived leaves very little to be said by a reviewer for a learned periodical, except that the author has successfully carried out his purpose, and that it ought to prove useful for the class of readers for which it is intended. The interpretation of Greek philosophers is sane, straightforward, and clear; and on certain big problems, e.g., the Socratic problem in Plato, opposing views are indicated. Good understanding is shown of the historical background, and portraits, full-length wherever possible, are given of the philosophers themselves. The style is easy, and the diction informal,

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with an occasional lapse into slang; but "the more vulgar illustrations I have employed, and the flippancies of which I shall be accused" (Vol. III, pref.) seem to be managed with such excellent taste that readers should be warned to discount any hope for the enjoyment of naughtiness. Anyway it takes genius to be flippant with Aristotle. As a matter of fact, the author is not really interested in vulgarities or flippancies at all, but only with the philosophers and their doctrines; and his writing is therefore delightfully free from self-consciousness and unrealistic artfulness. It is steadily good, and bits of it are superb, as, for example, the imaginary picture of Aspasia's salon (Vol. I, p. 209) and the description of Cyrene (Vol. II, p. 115). I am inclined to believe that, in the field of education at least, the third volume on Aristotle will prove most useful, and it can be recommended as an adequate, carefully systematized account of the Aristotelian philosophy.

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## JOURNALS AND NEW BOOKS

INTERNATIONAL JOURNAL OF ETHICS. Volume XLII, No. 2. Social Intelligence and the Communistic Experiment: *T. V. Smith.* The Content of Axiological Ethics: *H. O. Eaton.* The Ethics and Politics of International Peace: *F. L. Schuman.* Moral Freedom and Artistic Creativity: *L. P. Chambers.* Adjusting National Economic Inequalities by Railroad Rate Regulation: *G. H. Robinson.* Religious Faith and the Will to Know: *J. R. Geiger.* Report of the Fifth International Congress for Moral Education (Parts, 1930): *Felix Trojan.* Inadequacy of "Sublimation" as a Concept for Ethics: *W. S. Taylor.*

THE PERSONALIST. Vol. XIII, No. 1. (Herbert Wildon Carr Number.) Wildon Carr: Philosopher and Friend: *R. T. Flewelling.* In Memoriam: H. Wildon Carr. Sonnets: *H. B. Alexander.* Persons and Things: *H. W. Carr.* Two Great Philosophical Traditions: *J. H. Muirhead.* Carr's Contribution to Personalism: *J. W. Buckham.* Italy's Two Greatest Poets: *H. D. Austin.*

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Rickert, Heinrich: Goethes Faust. Die dramatische Einheit der Dichtung. Tübingen: J. C. B. Mohr (Paul Siebeck). 1932. xvi +544 s. 18 M.

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## NOTES AND NEWS

The newly elected officers of the Eastern Division of the American Philosophical Association which was held at New Haven, December 27–29, 1931, are as follows: President, Professor E. G. Spaulding; Vice-President, Professor Grace De Laguna; Secretary-Treasurer, Professor F. S. C. Northrop (re-elected); New Members of the Executive Committee, Professor H. T. Costello, Professor Henry Bradford Smith.

---

We print below the program of the Eighth Annual Meeting of the Pacific Division of the American Philosophical Association held December 28 and 29, 1931, at Stanford University:

DECEMBER 28.

10:00 a.m.

Matter, Space, and God.....*J. E. Boodin*
The Metaphysics of Space and Time.....*V. F. Lenzen*
Meyerson's Critique of Pure Reason.....*J. Loewenberg*

2:30 p.m.

*Symposium on Recent Contributions to Epistemology.*
Analysis as Philosophical Method—The Realist's Dilemma
*Hugh Miller*
The Displacement of the Datum: A Critique of Lovejoy's Epistemology .....*D. S. Mackay*
Reason and Nature: A Critique of Cohen's Epistemology
*E. A. Burtt*

DECEMBER 29.

9:30 a.m.

Business Meeting.

10:00 a.m.

Wildon Carr, Philosopher and Friend.....*R. T. Flewelling*
Ethics as Pure Postulate .....*D. C. Williams*
A Theory of Meaning.....*F. Anderson*

2:00 p.m.

Spinozistic Comments.....*B. A. G. Fuller*
Logic and Psychologic.....*H. J. Smith*
Nature, Mind, and Congruence.....*D. A. Piatt*

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Types of Physical Determination and the Activities of Living Organisms. RALPH S. LILLIE.

Artist, Philosopher, and the Ideal Society. GEORGE W. BEISWANGER.

Book Reviews. Journals and New Books. Notes and News.

**Volume XXVIII. No. 22. October 22, 1931.**

Neutralism and Radical Empiricism. C. V. TOWER.

Our Conscious States Picture and Apprehend our Nervous Processes. SIDNEY E. MEZES.

Book Reviews. Journals and New Books. Notes and News.

**Volume XXVIII. No. 23. November 5, 1931.**

Superstition. ALEXANDER LESSER.

The Conception of Life as Entelechy. J. A. LYNCH.

Book Reviews. Journals and New Books. Notes and News.

**Volume XXVIII. No. 24. November 19, 1931.**

The Latent Idealism of a Materialist—A Review of Santayana's *Realm of Matter*. JOHN HERMAN RANDALL, JR.

Book Reviews. Journals and New Books. Notes and News.

**Volume XXVIII. No. 25. December 3, 1931.**

A Definition of Value. JOHN R. REID.

Book Reviews. Journals and New Books. Notes and News.

**Volume XXVIII. No. 26. December 17, 1931.**

Biological Relativity. OLIVER L. REISER.

On the Meaning of a Proposition. A. USHENKO.

Book Reviews. Journals and New Books. Notes and News.

Index for Volume XXVIII.



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# THE JOURNAL OF PHILOSOPHY

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VOL. XXIX, NO. 2. JANUARY 21, 1932.

THE JOURNAL OF PHILOSOPHY

# A STUDY OF A PHILOSOPHY OF THE DETERMINATE.

## I

### THE SITUATION

THIS is the first of three articles on a *Philosophy of the Determinate.* The second will deal with Potentiality, and the third with Structural Analysis. Although inspired by a study of Aristotle, they can not claim to be an exposition of his system, since the emphasis is shifted completely from subject and substance to the situation, which seems to me to be prior not only psychologically, but even ontologically. From this point of departure his very thorough analysis of certain concepts and his proofs of certain fundamental propositions will be seen to lead to a restrained philosophy of the determinate rather than to the cosmological finality of his position.

The situation, therefore, is the fundamental concept of the philosophy of the determinate, and determinateness is the common character of situations. Hence to speak of a determinate situation would be tautology, and to ask what is meant by the determinate is to ask what a situation is, i.e., what is the common character of all situations in virtue of which they are called situations. Only in so far as they possess such a common character are they intelligible and describable as situations. In giving a rough account of this character we are outlining their formal properties which constitute the structure of the determinate. This does not mean that the term "determinate" is applicable only to situations, but that whatsoever admits of its application, does so, if it is not a situation, because it is part of one or the common character of some situations.

Now in every situation there is something going on, something happening, or something continuing to be. This may be taken as the characteristic or defining mark, in the loose sense of definition, since fundamental concepts can hardly be defined. But that there are situations and that they have this character is exactly what the so-called Laws of Thought seem to assert. In the various forms in which they are often stated, they give either the character of situations or the consequences to thought of such a character. In any



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case the situation is seen to be ultimate and therefore indefinable, but it admits of description in terms of elements or aspects distinguishable within it. Classification of situations should also be possible according as what is happening is one or more; this would give single and compound situations. The single in turn might be simple or complex. The complex may be said to be "vertically" divisible as distinct from the compound, which are "horizontally" divisible.

This requires some illustration. In the situation referred to by the proposition, "*A* is seeing *B*," there is only one thing going on or happening. It is, in ordinary language, described in two different ways, either in terms of *the active* ("*A* is seeing *B*") or in terms of *the passive* ("*B* is being seen by *A*"). But as Aristotle long ago recognized, the situations referred to by both these propositions are identical. His general analysis of "action" and "passion" is given in *Physics* III–3. Each of these is found to be inevitably bound up with the other; in the end we are led to the conclusion that they are one-sided views of the same activity, process, or actuality, that the "action" of the agent and the "passion" of the patient differ only as the steep ascent does from the steep descent, or the road from Athens to Thebes differs from the road from Thebes to Athens. The activity or actuality is one and the same; it is describable in two different ways.

In what follows we shall therefore use the term "activity" or "actuality" to refer to this single happening in any situation, as distinct from the one-sided descriptions of it. If English permitted the language formations of Aristotelian Greek, a better term would be the what-is-going-on.[1] Event, occurrence, happening, suggest the same thing, as indeed does the very word "situation." It is possible to develop a convenient symbolism to show types of presentation of a single situation. Thus, if *X* is the activity, *A* the agent, *B* the patient, *aXb* would be the full representation of the situation, *Axb* in terms of the active, *axB* in terms of the passive.

In Spinoza we find a similar view of activity. It is clearly expressed in part II of the *Ethics* (De Mente), definition VII: "By single things (*res singulares*) I understand things which are finite and have a determined existence; but if several individuals concur in one *actio* that they are all at the same time the cause of one effect, I consider them all thus far as one single thing." What we have called a single situation having a single actuality, Spinoza would therefore have regarded as a *res singularis*. It is true that in his system the distinction between *actio* and *passio* is a very prominent one; but he certainly never implies that they fall apart. Rather the

[1] It is obvious that we are using these terms to translate ἐνέργεια in its wider sense in which it includes κίνησις as well.

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subject in whose nature lies the greatest share of the ground for that single activity is the agent, whereas that in whose nature lies the lesser ground is so far the patient.

The form or structure of a situation, therefore, includes a single activity or actuality and two or more subjects participating in virtue of certain parts of themselves which we shall call grounds for that activity (e.g., the eye in one who sees). There is no relation between the subject and its activity; the latter is the actuality of the former, the former the potentiality of the latter. If there were a relation between the two, they would fall apart and admit an infinity of such relations. We would be left with Bradley's problem of the relation of the relation to the terms. Here it is not a problem [2]; it is solved by the recognition after an examination of what we call situations, that a situation must have in addition to its characteristic activity, subjects participating in that activity, and that *participation in an activity or being thus actualized is not in itself an activity.* Quite simply, being in a state is not possessing it. Things do not possess motion as something additional to themselves; they are or become things-in-motion. Nor is there a becoming of becoming or a change of change; things become and things change. These are their activities or actualities.

We return to the consideration of types of situations, activities or actualities. In a single activity the participation of at least two subjects is necessary, but the activity is one. The part played by either can not be eliminated without destroying the situation. For example, "*A* sees *B*," "Romeo loves Juliet," "Rome attacks Carthage," "*A* is going to Egypt," "*X* is to the right of *Y*." [3] Without *B* being seen, Juliet being loved, etc., there is no situation. Even where language uses the intransitive verb form, there must be more than one participant. "*A* runs," involves the motions of legs over a comparatively hard surface, and both the legs and the surface are indispensable to the activity. Even "*A* thinks" involves intelligible subject-matter.

*Compound* activities involve primarily co-extensive activities bound into one. For example, "*A* and *B* see each other," "Romeo and Juliet love each other," "*P* and *Q* are going to Egypt," "Rome and Carthage are at war." *A*'s seeing *B* and *B*'s seeing *A* are independent of each other in that either may be eliminated and there still remains a situation, though not the same whole one. Since there are at least two activities, or happenings, and they are co-

[2] Cf. Cook Wilson's reply to Bradley's argument—the business of a relation is to relate.

[3] In the last example, continuing to be, considered as preserving a situation from destruction, may be reckoned an activity. In the logic of situations, rest and motion are equally actualizations or activities.

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extensive, the analysis of compound situations may be called *horizontal* division. In the symbolism suggested above, such situations would be represented most adequately by *abXbc*, partially by *ABxba*, *abxBA*, or *AaxbB*.

These are only the primary forms of compound situations. We might have "*A* sees *B* who sees *C*," considered one situation, and many more difficult examples. Two courses are open to us. The first is to deny that compound situations are anything more than aggregates of single ones, since all the activities are independent. This seems strictly a legitimate claim (though a barren one), provided one has a clear conception of what these compound situations are which are asserted to be merely aggregates, and does not carry over the claim to complex situations. To follow the second course, it would be necessary to examine and state the various types of unity which permit the combination of single activities into compound ones. These might be, for example, identity of participating subjects, complete as in "*A* and *B* see each other," or "*A* sees *B* who hears *A*," or partial as in "*A* sees *B* who hears *C*"; specific identity, in addition, of the activity, as in "*A* sees *B* who sees *C*"; the fact of inclusion in a spatial or temporal whole determined in some other manner, etc.

The question seems more than one of agreement on rules and terms. It soon becomes apparent that a whole logic of situations or formal study of the determinate is necessary. It might even be urged, for example, that such a situation as that described by the proposition "Rome attacks Carthage," is not single, for it is analyzable into the many single, often co-extensive activities of individuals and companies in that war. Here it is the problem of collective terms, appearing as that of group participation in activity. Very great consequences in political philosophy follow on the results of such an analysis. Perhaps we should be compelled to admit that single activities arise from the participation of singular subjects, and that what is called collective activity is a compound activity in which a common end or purpose serves as the type of unity. Certainly this is the direction in which the analysis must go, rather than consider "Rome attacks Carthage" just an aggregate of single activities.

The same difficulty may be carried further, even into the realm of single activities where they have a singular subject. In the situation described by the proposition "*A* is wrestling with *B*," it might be argued that *A* is moving his legs, moving his arms, twisting his body, and using his eyes; *B* does likewise. And even the single motion of a single subject is divisible into the motion of its parts. Since the subject is infinitely divisible, so is the activity. There remain very few single activities, only perhaps those like sight and thought.

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Now while we may be quite ready to admit that the activity of a group as subject should be treated as compound, because there are co-extensive or independent activities of singular subjects (though bound by some form of unity), it is another matter where the subject is singular, and divisibility rather than dividedness is made the ground of the argument. These activities in which single subjects participate are the type we shall call single *complex* activities.[4] (These shall be distinguished later from single simple activities. Together they constitute single as opposed to compound activities.) The term "complex" is meant to indicate that such an activity is divisible infinitely, and therefore its situation is divisible infinitely, but nevertheless it is not composed of or put together from these divisions into which it may be broken up. The determinate nature of the complex activity is of the utmost importance to the general position which we are describing. From it follows the conclusion that the infinite divisibility of any situation in no way destroys its determinate character. Rather the latter makes the former possible.

Aristotle maintained that no change (in the present terminology, no complex activity or actuality) could be without an end. His frequent examples were that it was nonsense to talk of coming to be white or a cubit long or going to Egypt, unless it can actually be such and be completed. If that can not be completed then something else is happening. If I am going to Egypt, then the single activity of this situation is " going to Egypt." If I can not get to Egypt then it is nonsense to say that I am going there (except as a description of purpose). If I can only reach Greece, then the what-is-going-on of that situation is not "going to Egypt" but "going to Greece." It might be claimed that Aristotle is misinterpreting the opposite view, which would not deny that these changes are completed, but would maintain that they are merely isolated fragments due to the limitation of an infinite change. Thus, "going to Greece" is only a limited part of "going to Egypt," which is only a limited part of something greater. And all this points to infinite motion or change without which the limitation can not be understood. Spinoza, for example, says (*Ethics,* part I, definition 2) : "That thing is said to be finite in its kind which can be limited by another thing of the same nature, e.g., a body is said to be finite because we can always conceive another larger than it . . ." and he thinks all these can be conceived only through the attribute of infinite extension. It might also be said that to designate a certain motion "going to Egypt" is to give it a "teleological" character. But this is not Aristotle's meaning. He

[4] In so far as complex means woven together, it is not a good term. It has been chosen as the best to distinguish it from compound on the one hand and simple on the other.

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would not deny that going to Egypt might be the purpose; purely as such, we might even suppose it to be assigned to a march of less than a mile from here. The point is simply that if anything is going on it starts somewhere and stops somewhere. If we wish to describe it, the account must include its beginning and its end. If we describe anything less, we are simply dealing with something else.

This view is to be found in every part of Aristotle's account of nature and the world, and of knowledge. It is the explanation of his emphasis on starting-point (ἀρχή) and end (τέλος). From it follows the meaning of his much abused "teleology" and his theory of nature. Every change is determinate. It proceeds from determinate contradictory or contrary to determinate contradictory or contrary, from beginning to end. In these terms and in its type it is describable and completely describable. Furthermore the reply to a view such as that of Spinoza's is the firm denial that the determinate implies anything beyond. Touching implies the touched, but the limited as such, nothing. For in dealing with the limited or determinate, we are concerned with a whole which depends for this character entirely on internal constitution. We shall consider soon what difficulties this philosophy faces regarding possible implications of the determinate.

In any situation, therefore, in which there is a complex activity, there is one thing going on, one actuality, one activity. Its determinate single character is prior to any division. If it be actually divided, we have several different situations. The question now arises whether the complex single activity differs from the compound entirely because singulars participate in it. Does this determinateness of the subjects make the activity determinate, or is the activity in itself such? The latter seems the fairer conclusion. For a compound situation too (as in "*A* and *B* see each other") may have singulars as its subject. The division in this example, and that in "*A* is going to Egypt" or "*A* strikes *B*," are very different. Roughly we have distinguished them as *horizontal* and *vertical* division; and this difference is apparent in the activities themselves, as much as in their "relations" to their subjects. We shall have cause to consider the latter again, further on; at present it is sufficient to suggest that the singleness of the activity we have termed complex, and the singularity of its subjects are gradually apprehended *pari passu*, rather than either following from the other. For example, that "living" may be a single complex activity is discovered as much from the organization exhibited in our perception and action, as from the observation that each of us is a single body coming into contact with singulars. To separate the two sides would be a sort of vicious abstraction. In the case of "living" the conclusion is fundamental for ethical theory.

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It remains now to distinguish the single simple from the single complex activity. If the latter must have a certain beginning and a certain end, the former (e.g., seeing) can have its beginning and end anywhere. It seems almost timeless and complete at any moment. (Roughly the distinction between simple and complex activities is the same as Aristotle's between ἐνέργεια in the strict sense, and κίνησις.) The second difference is that the simple activity leaves the grounds in the participating subjects for the most part unchanged; the complex activity changes their attributes, and when least, their spatial ones.

Now since complex and simple are both single activities, and give that character to their situations, and likewise compound activities are said each to belong to one situation because of some type of unity involved, it is encumbent upon us to see exactly in what the unity of the situation consists. But this has already been done; for it has been concluded that the situation is one because what is going on in it is either a single activity or somehow capable of being treated as one. But it is also a situation for the same reason. Hence it would be correct to say that the unity and being of a situation are the same. Because it has one activity it is a situation, and is one situation. If it were not one, it would not be a situation. Its being is its being a situation. This does not identify the definition of unity and being, but asserts that in the case of situations the predication of the one implies the predication of the other. Determinateness is therefore the character of being a situation or fitting into (being part of) a situation. Determinateness is the common character we have discovered of situations, their structure or form as situations. These two propositions do not give a circular explanation of the determinate, as verbally they may seem to; for we have outlined it fully in terms of activity or actuality, subjects and grounds.

The philosophy of the determinate maintains that thinking and knowing have reference ultimately to such situations, and that to be means to be a situation, or an element or part of one, or a common character of situations. Now neither to be part of one or an element participating in several, nor to be their common character, itself constitutes a situation. Hence neither propositions predicating existence on the one hand, nor those predicating identity, difference, or universal nature, on the other, describe situations. To assert that Socrates exists is to name a common element of various situations. To say that Socrates is a man, is to set forth in relation to Socrates, the common character of situations in which he and in which other individuals participate. Thus statements, when put in the traditional logical form, no longer describe actual situations, but deal with what we shall later call their *structure*. To distinguish whether a

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proposition is situational or non-situational (i.e., whether it describes a situation or whether it describes structure or common character of certain situations) is not always an easy matter; in fact, to clarify this would be to develop a whole logic of situations, which obviously can not now be attempted. The following points may indicate possible lines of development:

"I see red (or this red)," describes a situation. "This is red" is non-situational, since it gives the common character of such situations as "I see this red," "*X* sees this red," etc. All judgments such as this, which, as we shall see later, ascribe potentiality, must be considered non-situational. The same is true of "this is round," which gives a common character of situations such as "I see round," "I feel a round thing," "In following the edge of this, *X* reaches its starting-point" (i.e., *X* goes round this), etc.

In connection with structure, the problem of levels of abstraction and degrees of indeterminateness is of the greatest importance; in a discussion of the situation it is not so relevant, since all situations must be equally determinate. Nor should determinateness of a description of a situation be confused with the determinateness of the situation. "*X* is sailing to Egypt" is a more determinate description than "*X* is going to Egypt," but the situation referred to is the same. On the other hand, "*X* is a sailor" gives the common character of various (voyage) situations in which *X* participates; it no longer describes a situation at all. We must not, however, fail to notice that only common character or structure and not situations themselves, can participate in the still more comprehensive situation of thinking-and-being-thought. Description is, therefore, in terms of universals; but this does not make any situation itself an abstraction.

The philosophy of the determinate further maintains that a situation is a whole, i.e., it can be understood in its own terms and factors, and implies nothing beyond it except the possibility of other situations. It does not require an infinite or indeterminate through limitation of which it may be conceived. At the same time it is here that the position we are describing meets its chief difficulties. The problem is whether the determinate as such and in itself implies anything different in character beyond itself. By the answer given we may roughly contrast types of philosophies. Aristotle's writings provide the grounds for a negative reply; at any rate, even if it is possible to deny that such would be his final answer, he certainly proves all the propositions indispensable to it. For Spinoza, the implication of determinate things and situations, i.e., of modes, is clear, if not to the imagination, at least to the intellect. Not only the fact of implication, but what is implied (infinite substance, apart from which nothing can be conceived through itself) can be clearly

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understood. For the Kant of the *Critique of Pure Reason*, the determinate points beyond itself. It implies something, but this something, whether one or many, is not to be understood. His position, therefore, lies between Spinoza's and the one we are here outlining. In the other *Critiques*, of course, he finds what is beyond the determinate clearer to the practical reason. Such distinctions have opened the door to attacks on thinking as a means of discovering reality, in favor of feeling, art, and religion. To these as claimants to show the way to a real not necessarily determinate, the philosophy of the determinate can only reply that knowledge consists of the known, that the known is known by knowing, that being known it must be knowable, being knowable it must be intelligible, and that intelligible means that it can be thought about. This is not an identification of reality with the intelligible, but of reality in so far as it is knowable. Knowledge is not of the situation in its total particularity; this perhaps, may be perceived, not known. But whatever activities we participate in apart from thinking, are simply not what we mean by knowing.

The philosophy of the determinate sees in the determinate as such, nothing beyond implied, except the ground of various situations, or of a more inclusive determinate, but leaves it empirically open which of these grounds may operate to actualize other situations. Aristotle says it very simply, if our interpretation of a difficult passage (*Physics*, III–7, 207b27–31) is correct, when he claims that the disproving of an actual infinite does not rob the mathematicians of their study, since they do not need it. They postulate only that a finite line may be produced as far as they wish. Referred to our present problem this means that a situation implies beyond only the possibility of a greater situation. That is all that truly can be said. Whether this be scepticism, self-restraint, or the recognition that concepts of immanent origin and application have no transcendental validity (i.e., give nonsense if thus applied), in any case it points to the conclusion that knowledge refers ultimately to situations. It may be noticed as a corollary of this position that the world as a whole is no determinate subject of discourse, being unable to enter into any situation.

The philosophy of the determinate, therefore, takes its stand on the claim that a situation is a whole, and that a whole is complete in itself. A situation is a whole because it can be understood in its own terms. The complete is limited, that is, has a beginning and an end, and the limited is not relative. Therein it is distinguished from contact.

In spite of this dogmatic assertion of a position, there remains the fact that infinite is used in many senses in which it seems to have

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a meaning, and it has been made the central concept of some philosophical systems. It is, therefore, necessary for a system which denies its priority, to consider its various senses, and to explain them in terms of the situation, to show in short, that you must have a finite (in the sense of a determinate) before you can have an infinite in any sense.

There are, on the whole, three distinct conceptions of the infinite: (1) as actual; (2) as ultimate subject; (3) as substance or nature or the one formula from which endless process follows. On analysis, all these will be found to point to potentiality as the key to their explanation, necessitating its investigation first.

(1) *The Infinite as Actual.*—This, in any of the forms it may take, such as being the ultimate stuff of the world, or as characterizing some ultimate stuff, or as a character of number (i.e., the assertion of an actual infinite number as of points in the line), has been carefully and critically shown by Aristotle to lead to manifest contradictions.[5] It is true that the type of argument he uses has been ridiculed by Spinoza;[6] but the conclusion seems scarcely different. For Spinoza says: "Thence, if anyone wish to consider the matter rightly, he will see that all those absurdities (if indeed they are all absurdities, about which I am not now disputing) from which they wish to conclude that extended substance is finite, follow by no means from the fact that an infinite quantity is supposed, but that they suppose an infinite quantity to be measurable and composed of finite parts; therefore from the absurdities which thence follow they can not conclude anything else than that an infinite quantity is not measurable nor composed of finite parts. . . ." And he goes on to compare their procedure to that of one who supposed a circle to have the properties of a square, and concluded from it that a circle did not have a centre from which all lines drawn to the circumference are equal. "For corporeal substance, which can only be conceived as infinite, without like and indivisible, they conceive in order to prove it finite, to be composed of finite parts, and to be multiplex and divisible."

All this by no means really conflicts with Aristotle's conclusions. For he too decides that the infinite has not the attributes possessed by that which is finite (i.e., determinate) and actual. His argument may be stated thus: all that is actual has these attributes; the infinite can not have them; therefore the infinite can not be actual. Hence he concludes it is potential, and a consideration of his solution must await our analysis of potentiality. But Spinoza, in assuming cor-

[5] *Physics*, III—4 to 8; *De Caelo*, I—5 to 7; *De Lineis Insecabilibus*; et passim.

[6] *Ethics*, part I, Prop. XV, scholium.

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poreal substance to be infinite, without like and indivisible,[7] is obviously using the term to mean something else, more in the sense of undetermined. The two arguments do not therefore clash; for each deals with something different.

(2) *The Infinite as Ultimate Subject.*—Since a subject is capable of actualization in contrary ways, and is so far indeterminate, this may be carried far enough to claim for the subject in itself a real indeterminateness. Against such a tendency Aristotle is struggling when he argues (*Posterior Analytics*—I—22) that white-wood is not the predicate of a "this," that there is not a separate subject of which white and wood are adjectives incidentally united, but that "wood" is here the subject. The opposite view, which amounts to an elimination of any distinction between essence and accident, leads either to Locke's idea of material substance as a substratum I-know-not-what, underlying groups of qualities, or Bradley's single ultimate subject, reconciling contrary predicates. Now since the "relation" of subjects and the situation in which they participate, is one of potential and actual, the nature of the subject itself and the problem involved, together with any possible solution, will become clearer on the analysis of potentiality.

(3) *The Infinite as Substance or Nature.*—This I take to be more akin to Spinoza's view of the infinite. Infinite extension as an attribute is really the common nature of extended things, at rest and in motion; and similarly one arrives at the attribute of thought. Then if, following this method, we ask what common nature there is to thought and extension, we find none except the subject-matter of logic. Apart from this, then, the unity of substance is an assumption; so under any circumstances is the infinite number of attributes. Such conclusions follow a procedure which might be called an inverted Spinozism. But Spinoza's God is more like the totality, or perhaps the unity of natures, as that from which all things flow—not in the sense of leave, but in which they are contained.

Aristotle too thinks of the nature of anything as that in it which determines it to action of some sort. In this way earth acts according to nature in falling, fire in rising. The nature of anything is a principle and cause of motion and rest, wherever the action really belongs to the subject and is not accidental. Aristotle's division of natural things from those whose action is compulsory, is somewhat the same as Spinoza's distinction between what is conceived through its essence and what is conceived through its proximate cause. On Aristotle's view the nature of a thing tends to coincide with its sub-

[7] It is interesting to note Aristotle's remark that if the infinite is substance it is indivisible; but the indivisible can only be infinite in the sense in which the voice might be called invisible (*Physics*, III—5). He means that that sense of it is irrelevant to what it really is.

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stance, and of the two kinds of substance, the more proper one, viz., form or essence. But as he makes it explicit (especially in *Physics*, II—8), the action of things follows from their natures when it is entirely regular or when for the most part so. Incidentally this is the true meaning of the much maligned Aristotelian teleology, that things are such as to participate in activities which exhibit universal or general uniformities. And this means that things are acting from their natures. Spinoza, too, often identifies *natura, essentia,* and *potentia.* But he finds the individual natures or essences only conceivable through the infinite nature, whereas in Aristotle they do not seem to point beyond their determinate selves. On the contrary, if they point in any direction, it is to situations. For the nature of anything does not work as something *a tergo;* rather, to describe nature is to sketch a pattern of potentialities. If therefore potentiality be found to imply the situation as prior, without which it is meaningless, then nature can not in any sense be opposed to the determinate as infinite. This does not deny the reality of grounds, but points to their character as grounds *for* something. The point at issue here, therefore, is whether nature can be conceived as one and infinite in the sense that all flows from the one potency or whether the very character of potentiality forbids this and it becomes meaningless thereby.

We have now seen that any notion of the infinite leads to an examinatiton of potentiality. If an actual infinite is self-contradictory, the infinite must be potential. It can not be conceived as ultimate subject without being capable of contrary predicates (and capacity implies potentiality). Nor can it be the single nature from which all flows, unless it be conceived as the one potency of every happening. Obviously the philosophy of the determinate, to maintain its ground, must give an account of the growth of these three problems out of the situation, and show that they all refer to it in some sense as prior and have no meaning apart from it. This can best be done by a careful analysis of the concept of potentiality.

Before attempting this, there still lingers a doubt. For it may be questioned whether we have been describing the real, or some form in which the understanding views the real. The transition from the philosophy of the determinate with its examination of a network of related concepts, to the position that these are mental figments for ordering a given or different character not directly open to the understanding, is not a difficult one. Herein lies the attraction of phenomenalism, between which on the one hand and Spinozism on the other, the philosophy of the determinate balances precipitously. According to it, the determinate is not a mental form applied to a real different in character; it is itself part of the real. But it is not the whole

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real; rather it is its structure, that part of which participates in the single activity of knowing-and-being-known, or thinking-and-being-thought, i.e., it is the intelligible or knowable part of the real. If it were the whole of it, it would have to be the participant in all our activities—perception, feeling, etc. But this the knowable as such obviously is not, and can not be, no more than if we should begin to see the audible and hear the visible. It is better to admit at the outset that knowing is not our only activity, and its all-embracing character and consequent dignity come only because it deals with common structures. But a structure is by its very nature a structure *of* something of which it is a part. Certainly the conception of structure also requires analysis in the philosophy of the determinate, to show its reference to situations and its "relation" to that of which it is the structure.[8] For the present it is sufficient to insist once more that perception, feeling, etc., are not inadequate thinking, however much thought may enter into them. We must not, therefore, mix activities, no more than we should mix drinks if we are to remain sober. Nor is it narrow-mindedness on the part of a philosophy of the determinate to refuse to concede an infinite number of attributes; for its claim is simply that what is known is known by knowing or thinking, and anything beyond, if it is to be known, will be known by the same activity or by no other. And until more is known, nothing can or should be said about it. This is not a glorification of human ignorance. It is not arrogance but self-restraint, which two, strangely enough, men find so akin as to require a keen perception to distinguish them. Hence the origin of Socratic irony.

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## ANIMISM AND MATERIALISM IN WHITEHEAD'S ORGANIC PHILOSOPHY

WHITEHEAD'S organic process is an outgrowth of the theories of Kant and James, and, above all, of Bergson. Into the continuous pure duration of Bergson it brings a quantum, or epochal character, upon which is based a theory of atomic organisms. Devised to account for the quantum, the organism, and the relativity of time, it is developed through the interplay of two logics, the organic and the material. Corresponding to these are two primary modes of prehensive unification: prehension, which is the transmission of feeling, and negative prehension, which is exclusion from feeling. Through these categories time is dependent for its objective

[8] The remarks above (page 31) concerning the impossibility of a relation between subject and activity apply here with equal force.

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validity upon microcosmic animation and upon the primordial nature of God. But the theory of negative prehension is directly opposed to the main tendencies of the philosophy of organism; without it the philosophy is inadequate, with it the philosophy is incoherent. Consequently not only is the epochal theory of time dependent upon animism (the theory of feeling) for its dynamic meaning, but upon an old-fashioned materialism.

Kant's problem, how is knowledge possible, has become in Whitehead a problem of scientific philosophy, how is measurement possible? Science must depend finally upon measurement, yet what property of nature gives measurement its validity? Now that relativistic physics has called our attention to it, we can see the profound importance of congruence between systems of events for the logic of measurement. One might even go so far as to interpret recent philosophy of science as the search for the necessary and sufficient conditions for congruence, which may be defined as the intertranslatability of characters of events between different physical systems. Newtonian physics had assumed a sufficient and necessary condition for congruence in what might be called the "syntropicity" of systems; the validity of measurement was assured if the measured and the measuring systems were subject to the same forces, were characterized by the same vector conditions.[1] But with the Fitzgerald contraction and the accompanying readjustment, syntropicity was shown to be merely a sufficient and not a necessary condition for congruence. There was but one alternative: if syntropicity was a necessary condition, then measurement must be impossible beyond the limits of the Newtonian Set. But with the acceptance of the less ominous conclusion, other problems presented themselves for consideration. Was there a higher condition which might be sufficient, or both necessary and sufficient? Or must congruence be its own justification, dependent upon the particular verifiable coincidence for its basis? The latter way was that of Einstein and his followers, the former was the way of Whitehead. Einstein had provided a point of transition in his theory of simultaneity, whereby space was rendered isotropic rather than aeolotropic.[2] The right and the left, for example, must be indistinguishable in the final physical equations. Here Einstein was content to rest, looking to coincidence and an arbitrary simultaneity for his logic. But this same isotropicity furnished the basis for Whitehead's attempt to find the higher invariant underlying congruence between systems. He could state the relation between the elements of a system in terms of the stratification of the

[1] "Syntropicity" as a *logical* concept is due to Professor H. M. Sheffer of Harvard. For its application to the present problem, however, I am entirely responsible.

[2] Birkhoff, G.: *Relativity and Modern Physics*, pp. 46–47.

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space-time continuum, bringing into nature properties corresponding to the tensor level of analysis.[3] The atomic actuality was the element which stratified its actual world into its own perspective with a permanent space and time. Yet, upon endeavoring to isolate the invariant which this stratification presupposed, Whitehead was driven to individual perceptivity, or the percipience of the actual occasion as organism. He failed to hit upon that property of the natural system which is, as it were, between syntropicity and perceptivity as a sufficient condition for congruence. It followed that in making perceptivity both the sufficient and necessary condition for congruence he did not get beyond a restatement of the orthodox relativistic view in terms of an objective rather than a subjective arbitrariness. Congruence depends for its definition upon the particular circumstances in which it is involved, just as does simultaneity for the Einsteinian relativists. In place of the mathemetician with his arbitrarily imposed coördinates, there is the monad with its autonomously determined definition of congruence.[4] That the latter approach is inadequate is shown in its uselessness as a concept in physical science, as contrasted with the utility of the vector concepts of force and velocity underlying Newtonian mechanics. Nor does the postulation of an "extensive connection" as a relation generating congruence add to the physical significance of feeling. The natural invariants corresponding to the tensor level of analysis have yet to be found.

The same perceptivity which is assumed to give objective validity to measurement pretends to give reality to time. Hand in hand with the revised subjectivist principle, that apart from the experience of subjects there is nothing, goes a revised cinematographic theory of time.[5] Hand in hand with the positive thesis of organism goes an unavowed antithesis of materialism. Both are grounded in the illegitimate doctrine of negative prehension, without which the theory of prehension is wholly inadequate.

Consider the problem of change. If change depends upon a feeling and mentality that are there in all actual occasions, so also must time. Change has been defined by Whitehead as the difference between actual occasions. Actual occasions themselves do not change; to admit as much would be to admit that very matter which the philosophy of organism abhors. But what are "differences between actual occasions," and how do they arise? Certainly not through merely reproductive feelings. A feeling that reproduced itself precisely forever would be the antithesis of change. It would be change-

[3] Mead, G. H.: "Objectivity of Perspectives," *Proceedings Sixth International Congress of Philosophy*, p. 76.

[4] *Process and Reality*, p. 508.

[5] *Process*, pp. 238–294.

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less contemplation. But are not *all* prehensions feelings, and is not the solidarity of the universe dependent upon their reproduction? The answer to these questions is the surprising doctrine of negative prehensions: All prehensions are feelings, but some prehensions are not, namely, *negative* prehensions.[6] Negative prehensions are, on the contrary, exclusions from feeling, eliminations of those aspects in a prehended actual entity that are incompatible for the concrescence going on. Hence they are the arbiters of relevance, the guardians of subjective harmony. Nowhere does Whitehead tell just what negative prehensions are, though often enough he tells what they have to do. In truth, they are unfeeling feelings, disjunctive conjunctions, external internalities. With them, the theory of prehension is faulty; without them it is impossible. And it is negative prehensions that bring about the differences between actual occasions, by excluding from successive occasions the identical reproduction of their predecessors.[7]

Change must be a change of quality, of essential relations; therefore it requires a multiplicity of instances in which a quality can be experienced as changed, threaded by a continuity which supplies the identity of the changing. In other words, change must make a difference; thus far Whitehead is right in holding that change is the difference between actual occasions. Difference is inconceivable without multiplicity, and multiplicity without difference. Hence change demands both. But prehension is merely reproductive; like sympathy it is simply the feeling by *B* of *A*'s feeling as felt by *A;* it is a feeling *of,* and *with.* This means that there is more than a mere mirroring of feelings; feelings are transmitted directly or indirectly from one occasion to another. The feelings transmitted are the identical feelings felt by the transmitter; to repeat, they are reproduced, and *as prehensions they are reproduced without change.* Yet there is novelty in the way the prehending entity feels its object; this is the novelty of its own subjective form, and is *how* the entity responds to its prehension. And the subjective form is a function of the exclusion of irrelevant elements in the prehended entity by negative prehensions. Herein lies the difference between actual occasions, i.e., change.

Change, then, is dependent upon negative prehension, or upon the interplay between prehension and negative prehension. Where, now, do these latter get their power; what is the drive from behind that makes them change things? For answer we are referred to the subjective aim (form of the private *élan*) of the individual actual entity, which in its turn is grounded in the primordial nature of

[6] *Loc. cit.*, p. 335.
[7] *Loc. cit.*, p. 321.

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God. Change, and *a fortiori* the time which characterizes it, are expressions of the divine animation.

And herewith the organism becomes infected with matter, matter none the less for its negative statement. It was Leibniz who first invented a *materia prima* as a principle of individuation for his monads.[8] The *materia prima* was a principle of exclusion, a repeated negation through which the monad became itself. Negative prehensions serve the same rôle for Whitehead. They define the actual occasion in the perspective that is its environment. And though Whitehead does not say as much, it would seem that an environment is replete with matter. In terms of its negative prehensions an entity is strikingly like the material body of Newtonian cosmology, with its external relations and its absolute space and time. Even more striking is the negatively prehended object's resemblance to the exclusive, feelingless, utterly incompatible material object of popular conception.

It seems almost as if time were to become a function of matter rather than of experience. But in fact it becomes just what one might have expected from the theory in question, it becomes a function of consciousness. A turn of the coin which has just shown up matter will reveal consciousness on the other side. Into the theory of prehension as unconscious experience comes a pervasive consciousness arising through negation. Whitehead is explicit about this: "The triumph of consciousness comes with the negative intuitive judgment. In this case there is a conscious feeling of what might be, and is not. The feeling directly concerns the definite negative prehensions enjoyed by its subject. It is the feeling of absence as produced by the definite exclusiveness of what is really present."[9] However trivial may be the mentality of an actual entity, it can not vanish absolutely, else time would vanish too, and that "actual" entity would be eternal.

Finally, the theory of simultaneity itself fails at this same weak point. In his attempt to reconcile the classical view, with its successive instantaneous spreads of nature, with the relativity of time, Whitehead has been forced to posit a durational past and a durational future. Simultaneity is intransitive, so that two occasions that are each contemporary with a third may be related successively to each other. This is required by the general theory of relativity. But it is inconsistent with Whitehead's own view of temporal succession, where the generating relation is causality. The successive events just mentioned are in the durational past or future; they are

[8] Quoted in Lynch, J. A., *Perspectives in Relation to Activity as Substance*, Doctoral Dissertation, Chicago, 1928.

[9] *Process*, p. 417.

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*not* in the causal past or future. Yet they must be in the causal past or future to be past or future at all. The only other relation open to them is that of the negative prehension. Barring this, there is nothing for it but to precipitate a whole legion of specious pasts and specious futures along with the already questionable specious present. Yet such a relativism would be thrice static, without the fortunate intervention of mentality and God.

Whitehead's philosophy of organism, then, is not without its materialistic implications. And explicitly it is basically animistic, despite the antipodal nature of these two points of view.

But is animism as an assumption quite so vicious as it has been painted? Being for the moment as sympathetic as possible toward its claims, what virtues can we see in panestheticism? Let us assume that just as the significance of the "Copernican revolution" was in its meaning for the method of physical science, the significance of the "Einsteinian revolution" lies in the expansion of that method to a utility for social science, for "the science of tomorrow." Something of the kind is suggested by the statistical character of modern physics, and by the theory of mental measurement.[10] Then the advantage of a cosmological animism might lie in the freeing of society for social experiment. Sociology has failed in so far as it has regarded society as material; only revolutionism has grown on that assumption. To about face and look upon the universe as essentially experiential might make it less difficult to maintain an attitude of objective sympathy in social science.[11] Certainly social science requires both objectivity and sympathy; its assimilation to scientific method may lie in the extension of social categories into physical science as well as in bringing the physical concepts such as "forces" into the social context.

There is, however, aside from the difficulty most of us find in taking the leap toward animism, the fact already pointed out that feeling thus far has shown no importance at all in the conceptual scheme of physical science, however important it may be for the science of society. And it would seem that its importance for social science need not be grounded in a useless extension to nature as a whole. Nowhere in Whitehead's own writing is a social or any other justification given for his animistic bias.

What of the materialism which nestles among these unavowed presuppositions? Perhaps it too has some meanings in the demands of experience and method. Certainly the arguments of a Santayana

[10] See, in this regard, Thurstone, L. L., "The Measurement of Psychological Value," in *Essays in Philosophy*. University of Chicago, 1929.

[11] See, "The Rôle of Sympathy and Ethical Motivation in Scientific Social Research," by A. B. Wolfe, this JOURNAL, Vol. XX (1923), p. 225.

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are suggestive: "Matter . . . is the principle of existence: it is all things in their potentiality, and therefore the condition of all their excellence or possible perfection."[12] But for most contemporary thinkers Santayana's excursion into the discredited realm of matter is simply quixotic. And chief among such thinkers has been Whitehead, whose philosophy of organism is intended to be militantly anti-materialistic. If, as the contemporary outlook seems to imply, materialism is an inadequate philosophy of nature, Whitehead's materialistic secret is no less deplorable than his animistic credo. In so far as materialism creeps into his system, his is a house divided against itself.

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## BOOK REVIEWS

*Il problema teologico come filosofia.* PANTALEO CARABELLESE. Rome: Tipografia del Senato. 1931. xi + 199 pp.

*Il sistema filosofico di Josiah Royce.* FERDINANDO ALBEGGIANI. Palermo. 1930.

Among the recent numbers of the distinguished series of Publications of the School of Philosophy of the University of Rome, under the direction of Giovanni Gentile, is a work in critical metaphysics which gives an interesting and fruitful direction to the type of idealism represented by this school of philosophy. The author, Professor Carabellese, makes his analysis in theological terms, but it is a fine piece of metaphysical criticism quite apart from its theological implications. In this, and in other ways, it reminds one of Spinoza's method.

The fundamental problem of the book is that of the nature of objectivity, and the major portion of the argument is the exposition of the various ways in which empirical objectivity has been confused with other things by the various philosophical traditions. The author points out how uncritically the realistic common sense which lingered in Kant identified objective being with the intelligible universals, and how Kant, in his effort to avoid the ontological argument of Descartes, insisted that these universals were purely formal. As a result, Kant was misled into a methodological treatment of the thing in itself and abandoned the attempt to discover the empirical meaning of objectivity. The idealists, on the other hand, imagined they found the empirical meaning of the objective in the idea of the Other. Carabellese shows with beautiful precision how this *negative* conception of objectivity led the idealists into a hopeless di-

[12] *The Realm of Matter*, Preface, p. v.

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lemma: either the thing in itself must be abandoned, as in Hume's scepticism, or the principle of contradiction must be regarded as the fundamental law of consciousness (Hegel). Those idealists who tried to escape this dilemma were forced to deny the validity and intelligibility of experience. Such an attitude toward experience made it easy for those philosophers who thought it no disgrace to be empiricists to imagine that they had escaped the problem of objectivity by the simple device of relying on the pluralistic and relativistic character of experience. More recently the realists have tried to construct objectivity out of subjective experience, assuming, however, that the *particular* data of experience are objectively real to begin with. After this exposition of the pitfalls of others, the author points out that though Gentile's analysis of the concreteness of experience avoids these pitfalls, it leaves the problem of the nature of objectivity still unsolved, for though this philosophy begins with concrete being it consciously aims at pure being. From this point of view the nature of objectivity (or, if you choose, of God) is at least clearly defined, though merely formally, as *the* problem of philosophy, that is, as the objective of philosophical analysis. God is what philosophers will know when they have finished their task. Such a definition is, of course, purely negative or denotative and does not claim to solve the problem which it defines; its sole merit is its freedom from entanglements.

Turning to religion, the author shows in two brilliant chapters (VII and VIII) that religion has its own type of empirical approach to the objective or to God, but that, as in the case of philosophy, this approach is vitiated by confusions concerning what religion achieves. The presupposition of the philosophy of religious experience and of mysticism, that by a particular kind of experience man can secure evidence of an objectively existent God, is intelligible but unproved and probably will always remain so. For faith is by its very nature not a form of knowledge but of adoration. Religion does not know the existence of pure being, and to confuse existence and essence, as the traditional ontological argument does, only makes matters worse. But religion, or adoration, *is* itself pure being. "Religion is something with which one can not experiment, precisely because it is an acquiescence in the pure transcendental condition of experience. James experimented with religion and became a spiritist; Augustine and Francis of Assisi lived with religion as a pure faith and lost themselves in the afflatus of the Franciscan life of love, in which nature is as intimate as the internal voice is for Augustine. Franciscan existence is Augustinian faith" (p. 162).

In religion, therefore, God is in a sense realized; not because he

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is known, but because he is lived or exhibited in adoration. Philosophy, which seeks to know God, can not find God in the reciprocity of *alter* and *ego,* nor among the concrete objects of experience, whether of the good, the true, or the beautiful; but it can find God immanent in its own being. God is the "pure idea" or real being of philosophical experience. The fact that experience implies an immanent objective factor makes a new type of ontological argument possible; but this God must not be confused with any existence, substance, or thing in itself whatsoever.

American readers may not find the terms and categories of the Italian philosophical tradition congenial, but it ought to be comparatively simple for them to translate Carabellese's lucid exposition and systematic argument into their own terminological idiosyncrasies, substituting, with minor adjustments, for his God, eternal objects, immediate experience, nature, or truth; and they will find in the volume much that is relevant to their own controversies and suggestive of fresh insights into traditional problems.

Even more readable, though probably less stimulating, is Albeggiani's critical exposition of Royce. This volume, and also Carabellese's, come from the Philosophical Library of Palermo, which has for years been one of the foremost centers of philosophical discussion in Italy. The author undertakes a critical evaluation of the whole of Royce's system. In this the book is not very original, or fruitful, since the burden of the author's comment is that Royce failed to solve the problems he raised and that he is notable more for his penetrating analysis of his problem than for his specious solution. This has been said by many and believed by more. But as an exposition of the development of Royce's philosophy I know of nothing so comprehensive, so intelligent, and so clear in any language. The author combines a sympathetic appreciation of Royce with a penetrating understanding of the fundamental problems at issue and he puts into a single volume of beautifully precise Italian what it took Royce volumes of voluble English to say. Very useful even for American students is the bibliography of Royce at the end of the book.

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*L'Origine et le Développement de la Méthode Expérimentale.* CHI-KAI LIN. Paris: F. Loviton et Cie. 1931. Pp. 422.

This is a well-documented series of studies in the history and philosophy of experimental methods as they arose in the evolution of primitive and ancient thought and modern natural sciences. Ex-

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perimentation is regarded thus as older than modern scientific practice or logical theory. Philosophically the prevailing thesis which is both the principle of selection and conclusion of Dr. Lin's researches is decidedly positivistic. The traditional associations of positivistic logic with the theories of Francis Bacon and Auguste Comte are, however, enlarged in order to account for the following historical factors: (1) the prehistoric gropings of primitive mind; (2) the magical and occult practices that persisted beyond the Middle Ages; (3) the growth of experimental techniques in the evolution of industrial processes; (4) the Renaissance methodologies of Da Vinci, Galileo, Francis Bacon, Robert Boyle, Descartes, and Leibniz which were not discontinuous with the medieval experimental theories of Roger Bacon; (5) the influence of Newton's empiricism; (6) the eighteenth-century specialization of the sciences independently of metaphysics; (7) the nineteenth-century organization of scientific philosophies on a "positive" basis (Comte, Spencer etc.); (8) the "inductive" logics of J. S. Mill, Whewell, and Claude Bernard and their influence on contemporary epistemology (mainly that of Lalande and Meyerson).

These historical extensions of the meaning of the experimental method could be deepened by further analysis of experimental procedures other than those included in the positive sciences. For instance, Leonardo da Vinci experimented as much in his painting as in his mechanics. And in contemporary thought there are attempts to extend the experimental method to social sciences, literature, drama, and philosophy itself. It is a limitation of positivistic logic to overlook these. There are many more typographical errors than the list of errata shows.

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## JOURNALS AND NEW BOOKS

PHILOSOPHICAL REVIEW. Vol. XLI, 1. Philosophy in France, 1930: *Abel Rey.* Contemporary German Philosophy: *Arthur Liebert.* Two New Logic Books: *H. R. Smart.*

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## NOTES AND NEWS

TO THE EDITORS OF THE JOURNAL OF PHILOSOPHY:

Professor Dotterer's review of my book, *The Adventure of Science,* in this JOURNAL (Vol. XXVIII, pp. 580–585) is in general so sympathetic and so considerate that I am surprised that he should come to make the criticisms that he does in connection with my treatment of relativity. He cites my use of the story of the two

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twins and my statement that "it is now a matter of indifference whether we regard the sun in motion and the earth at rest, or *vice versa,*" as illustrations of my uncritical repetition of "the questionable statements of certain other popular and semi-popular expositors." The implication is that I have misconstrued the scientific principles of the theories of relativity and that I have deduced consequences from them which are in no way scientifically justified, but which are based on the errors of popularizers.

If this were true it were a grievous fault. But it turns out almost the other way around. In his attempt to refute the story of the twins, Professor Dotterer relies on the analysis of Professor Lovejoy, whereas in regard to his criticism of my interpretation of general relativity he relies on Professor Mackaye. He neglects to say, however, that both of these gentlemen, so far from attempting to introduce a wedge between the original theories and the so-called deductions of popularizers, are really impunging the validity of the original doctrines. Professor Mackaye's *Dynamic Universe* was written manifestly to contradict the Einsteinian theories, while Professor Lovejoy concludes his articles (in the *Philosophical Review,* Jan. and March, 1931) with the statement that physicists should accept Bergson's doctrine of "an indefinite multiplicity of fictitious times but only one real time." "And the physicists," says Professor Lovejoy, "are quite right in feeling that this does *not* leave the theory of relativity intact" (italics are his own). Thus Professor Dotterer's charge that I do not understand the theories of relativity resolves itself into the fact that he himself does not understand the full implications of the second-hand reasoning that he has utilized.

I am assuming that Professor Dotterer accepts the scientific validity of Einstein's formulations. If he does not, he should have stated the fact in his review. He could have written on that case somewhat as follows: "In his treatment of relativity Mr. Ginzburg accepts the orthodox view which regards Einstein's theories as sound. Unfortunately, despite their almost universal acceptance by physicists, these theories do not happen to be true, for the reasons adduced by Professors Lovejoy and Mackaye. It is a pity that Mr. Ginzburg has not displayed more independent judgment."

Had Professor Dotterer written in this wise, the issue would have been purely on the validity or our respective verdicts on relativity. I must say that I have lined up on the side of relativity, not because it is the side of the strongest battalions, but rather because I believe it is true on the basis of the evidence. (It is for this reason that I have taken the unpopular side in regard to Lamarck and Darwin.) I have made no deductions from relativity that do not seem to me logically justified, regardless who used these deductions

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first, but I am always ready to be shown any fallacies that have crept into the reasoning. Thus as regards the story of the twins, the fallacy seems to me to lie rather in Professor Dotterer's objections, than in the argument as I use it. I will not take the space of this JOURNAL to refute Professor Dotterer inasmuch as Professor McGilvary has done such a thorough job in refuting Lovejoy's analysis, on which he bases his contentions (see *Philosophical Review*, July, 1931, and this JOURNAL, Vol. XXVIII, 1930, pp. 421–435). Suffice it to say that on the basis of Professor McGilvary's analysis there is shown to be nothing fallacious in the slowing up of time with relative motion, and the story of the twins is legitimate, provided it is understood that a round trip involves relative acceleration, which has to be dealt with by the more complicated relationships of the general theory, rather than by the special theory alone.

As regards Professor Dotterer's contention that the presence of inertial forces definitely proves which body is in absolute accelerated motion, I must say that it expresses a complete ignorance of the manner in which the significance of inertial forces has been transformed by the general theory of relativity. In the Newtonian system the presence of inertial forces was the criterion for distinguishing between accelerated motions, which had to be regarded as absolute and referred to real forces operating from a fixed space; and uniform linear motions, which had to be regarded as relative and which had no cause except the principle of inertia. But under the Einsteinian system the presence of inertial forces (or more properly the tendency of test objects to describe accelerated motions with reference to the frame) no longer is a sign that the frame is undergoing absolute acceleration in space, but only means that we have to do here with space and time curvature. This curvature is associated with the distribution of matter in the universe and it is responsible for accelerated motion. But the sort of accelerated motion it is responsible for is the sort that can be treated relativistically, for as we change frames we find that the observed space and time curvature changes according to a covariant law, and that in each frame the observed motion of a body follows the shortest available path in the curved space and time, according to a generalized form of the principle of inertia. The distinction of treatment for accelerated and uniform linear motion disappears, for what is uniform motion in one frame is accelerated when viewed from another frame, and in all cases the motion of a body as observed from a given frame follows the space and time curvature as evaluated from that frame.

In view of the fact that the general theory of relativity was devised specifically to carry out the relativization of accelerated motion, I am amazed to find Professor Dotterer challenging my statement about its being a matter of indifference whether we regard

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the earth or the sun as at rest. My statement, qualified in the context with the proviso that we must chart events in the space and time measured from the body that we consider at rest, was simply a recognition that the fundamental aim of the theory had been successfully achieved. It is, I must insist, entirely accurate, and the monstrous inference that Professor Dotterer draws from it, namely, that it would imply that it is "a matter of indifference whether we say that the mass of the sun is 330,000 times that of the earth or that the mass of the earth is 330,000 times that of the sun," is a product of his own imagination. As a reason for this inference he gives the statement that "according to the relativistic explanation the motion of each of these bodies is determined by the curvature of the space (or space-time) in which it moves, which in turn depends on the quantity of matter in or near the region in question." It is probably here that lies the source of his confusion. Professor Dotterer seems to forget that curvature affects time as well as space and that the curvature of time is necessarily measured at the point of the observer rather than at the point where the observed object is located in the observer's spatial frame. Thus if we are observing the earth's motion from the sun, we should have to chart the motion in an intensely curved time, which curvature would be contributed by the tremendous mass of the sun. But the earth would be seen moving in a space that is slightly curved, for the spatial curvature would be contributed mainly by the earth's own mass, the sun's mass being 90,000,000 miles away. When observing the sun's motion from the earth, the conditions would be reversed. Then the sun would be moving in a region of intense curvature, but its motion would be timed in clocks that are only slightly warped. In changing our vantage points we do not destroy the invariant relationships due to the presence of the various masses in the universe, but merely decompose them into different spatial and temporal components.

BENJAMIN GINZBURG.

NEW YORK CITY.

TO THE EDITORS OF THE JOURNAL OF PHILOSOPHY:

One who insists that it is "a matter of indifference whether we regard the earth in motion and the sun at rest, or *vice versa*," can hardly refuse to admit that it is also a matter of indifference whether we regard the stay-at-home twin as in motion and the other as at rest, or *vice versa*. Consequently it must be a matter of indifference whether we regard the biological processes of the former or of the latter twin as "slowed up." If, however, we maintain that, as a consequence of his very rapid motion, the one twin becomes physiologically younger than the other, we commit ourselves to the view that it is *this* twin who is *really* in motion. In other words,

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we give up the principle that all motion is to be regarded as relative.

Perhaps the solution of the difficulty is to be found in the circumstance that the general theory of relativity, with its doctrine of the "mollusc," or system of "world lines," with respect to which the traveling twin may be said to move, really brings us back again to conceptions not wholly unlike absolute space and absolute motion.

Mr. Ginzburg's justification of the mathematical possibility of treating either the earth or the sun as at rest is, I believe, perfectly correct as far as it goes. It depends upon assuming now the earth and then the sun to determine the frame of reference from which motion is to be observed. But why should we limit ourselves to only two points of view among the many that are theoretically possible?

If the hypothetical observer is stationed, neither on the earth nor yet on the sun, but on some body which is in motion with respect to both of these, the two motions are no longer interchangeable. Suppose, for example, that both the sun and the earth are observed from Mars. Then, assuming that the mass of a given body determines space-time curvature in the manner described by Mr. Ginzburg, the time of our observer would be only slightly curved (since the mass of Mars is very small), while the sun would be seen moving in a space that is very intensely curved and the earth in a space that is only slightly curved. If, now, we suppose our observer to be placed on one of the stars, as Sirius or Polaris, although the observer's time would now be very intensely curved (on account of the much greater mass of the star), the earth would still be seen moving in a space that is very slightly curved and the sun in a space that is very intensely curved.

Thus wherever our observer be stationed, except for the one position on the earth itself, he will see the earth moving in a very slightly curved space and the sun in a very intensely curved space. In other words, he will see the earth moving around the sun. Or, more accurately, he will see both of these bodies revolving about a common center. But as both bodies move about this common center the size and relative positions of their orbits will be determined by the degree of curvature of the space in which each is seen to move; and since degree of curvature depends upon the quantity of matter which is in or near the region of space-time in question in each case, the only way in which our observer could reverse the relative size and position of the two orbits would be to reverse the ratio of the masses of the earth and the sun.

Inasmuch, then, as there is clearly only one frame of reference—that of the earth itself—with respect to which the earth can be said to be at rest, and an indefinite number of frames of reference with respect to which it must be said to be in motion, it seems very mis-

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leading to assert that it is a matter of indifference which phraseology we adopt. Moreover, so far as I know—here, of course, I may simply be exhibiting my ignorance—no one has ever calculated the relative masses of the members of the solar system except on the assumption that it is the earth which is revolving around the sun, and not *vice versa.*

In attempting to meet the other difficulties alluded to in my review, Mr. Ginzburg reminds us that "inertial forces" are due to space and time curvature. Are we to suppose, however, that in the block-and-coin experiment described by Professor Mackaye (*The Dynamic Universe,* p. 259), the tendency of coin *A* to move to the right is due to space-time curvature produced by the collision of the two blocks? If this is the explanation, one can't help wondering why both coins are not affected in the same way?

Perhaps the solution of these difficulties is also to be found in the circumstance that, strange as this may seem, the general theory of relativity is in certain respects less relativistic than the special theory. It recognizes a system of "world-lines" with respect to which motions must be charted. If we may limit ourselves for the moment to the spatial aspect of the space-time continuum, this implies that all motions which are mechanically significant are relative to the frame determined by the fixed stars, and that it is *not* true that *any* frame of reference is as significant as any other.

In re-writing that portion of my review in which I had the temerity to touch upon the theory of relativity, Mr. Ginzburg seems to reveal an attitude which has usually been more characteristic of religious apologetics than of logical discussion. He seems to feel that one should "line up" and declare himself either for or against the doctrine in question. But since when has it become improper to treat cosmological theories—even those of Einstein—as hypotheses, the alleged implications of which are to be compared with each other and with the relevant facts? "He that is not with me is against me," hardly seems to be the proper maxim here. Mr. Ginzburg's suggested revision would not be acceptable for the reason that I am not willing to call myself an opponent of the theory of relativity. My attitude has been that of a near-convert, whose motto has, however, remained *intelligo ut credam* rather than the reverse. It must be admitted that for some time I have been troubled by increasing doubts; and while I can not deny that some of these doubts have been suggested or strengthened by reading the writings of Professor Lovejoy and Mackaye, it doesn't help in the least to be told that these men are open enemies of the one true faith.

RAY H. DOTTERER.

THE PENNSYLVANIA STATE COLLEGE.

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# THE JOURNAL OF PHILOSOPHY

## A STUDY OF A PHILOSOPHY OF THE DETERMINATE.[1]
## II

### POTENTIALITY

THE recognition of potentiality arises in part from the contradictions which result from an attempt to understand change; more directly, however, from such an examination as we have carried out of the situation. Since the activity, actuality, or what-is-going-on (in what from opposite points of view are called the active and the passive) is really one and single, we are led to the relational or dynamic rather than the qualitative approach. This means that instead of considering activities as qualifying their subjects, we see them as a kind of relation between two or more subjects in a relatively closed whole; hence it becomes clear that the relation rests on grounds within the subjects, i. e., it is in virtue of certain elements or parts of their character that they participate in the activity. Thus arises the idea of the subjects as potential with respect to the activity in question.

The situation is a whole, knit together by the fact that everything in it participates somehow in the single activity, either by containing one of its more important grounds, or by being some sort of necessary condition. But the things which while participating in the activity make the whole actual, have an existence outside it, apart from engaging in that activity. What *then* is the nature of the *grounds* of the activity, i.e., those elements of their character in virtue of which they take part in the activity? Aristotle's position (stated in this more recent terminology which he himself does not, of course, use) is that a thing's being such as to participate in a particular kind of activity or actuality is as much a real property of the thing as any of its qualities or the material of which it is composed. In fact these properties constitute its nature and *are* it in so far as it is intelligible. To understand any thing we must know its function or end, that is, what it is naturally capable of doing.[2] There are real grounds in things, and things are, so to speak, qualified by the possibility of hypothetical judgments about

[1] Continued from preceding issue, pp. 29–41.

[2] The sharpness of a knife is as real as the precise angle made by the two sides of the blade; but sharpness implies cutting.



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them. With respect to any activity, therefore, we may speak of potentiality in the things which make up the whole situation, at the time when they are apart from it. Thus man, in virtue of his eyes, has the potentiality of sight; likewise of thought, etc. Objects are visible, i.e., have the potentiality of being seen, the actuality of which is color. When these potentialities of man and the object are actualized (when there is light), we have the single activity or actuality, viz., seeing-and-being-seen.

This is one type of potentiality, corresponding to what we have (in part I) called the single simple activity, that which begins and ceases leaving the grounds for the most part [3] unchanged, so that the activity may be resumed in the same manner. It does not go from one determinate contrary to another, altering the grounds in one or both of the participants and resulting in a product by the transformation of one or both of them. The activity, e.g., seeing, thinking, understanding, living well and being happy, seems to contain past and present in one, having no definite end different from what precedes it. Very different is the example of learning or building. The student, when he has finished learning, does not straightway lapse into the former state of potentiality with regard to that activity. He has changed; it is not therefore a simple activity, but change or movement, i.e., a complex one. Building illustrates this well: it is in a sense the simple activity of the builder (assuming he is not learning but has a fully developed capacity for building), but not of the materials. In their case, it is change, movement or complex activity. The grounds become exhausted; the materials begin as potentially a house and end as actually a house. Thus there is a growth, a definite product. In qualitative change there is an end in the contrary; in motion in space there is a different place.

So far we have found two kinds of potentiality, corresponding to the simple and complex activity, respectively. They are best illustrated by Aristotle's favorite distinction between the man who knows but is not using his knowledge, and the man who is learning. The actuality of the former is understanding, of the latter, learning. The distinction is between the exercise of a fully developed capacity and the exercise which develops the capacity. Both have this in common, that they can be fully actualized. The movement or complex activity, as an actuality of the one type of potentiality, tends to bring it to completion and so put it out of existence. The potentiality for movement has, therefore, for the most part this distinct character, that it is of finite duration. On the other hand, the

[3] For the most part, because in mortal affairs there is never any absolutely simple activity. We must suppose, for example, that there is always some change, however infinitesimal, in the ground (e.g., within the eye on each occasion of seeing), but relatively we may speak of simple activity.

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actuality which is simple activity, needs no duration to complete it; it is complete at any moment. It has no limits such as a beginning and end in contraries. If a movement goes on after it has reached the contrary, and is still the same sort of movement, it is only by repeating what has happened already. But this is not true of simple activity. Each moment is not a repetition of the previous one; all division of it while actual, is entirely arbitrary. It seems almost to have a timeless character, to transcend time, or more properly speaking, the concept of time has no application in its description.[4]

The fact that movement, process or change is from determinate contrary to determinate contrary (i.e., there is a definite beginning and a definite end of that movement as such) and that continuation of the same kind can only be secured by repetition within the same or different matter, leads us to a third type of potentiality, which turns out more relevant to the problem of the infinite. Only in a few cases (e.g., circular motion) is immediate repetition within the same material possible. In linear motion it takes the form of producing a finite straight line. If, therefore, there is a type of potentiality corresponding to simple activity, and another to complex activity or movement from one contrary to another, there should be a type of potentiality corresponding to the actuality which is repeated movement, whether it be immediate repetition or at intervals. In immediate repetition it will give us a series *ABCD* . . . in which an actual or completed *A* contains the potentiality of *B*, an actual *B* of *C*, an actual *C* of *D*, etc. For example it is the traversing of a distance *A* which makes possible the traversing of the next distance *B*, whose traversing in turn makes possible that of the following distance *C*, etc. It is obvious that the potentiality of the whole series (to take an instance where it comes to an end) can not be said to lie in *A*. This would be a misuse of the idea of potentiality, just as it would be wrong, as Aristotle recognizes, to say that earth is potentially a man (*Metaphysics*, $\theta - 7$). It is not, until it has become seed, and perhaps not even then. It is not, so long as there is some foreign medium or material in which there must be a change. For example (on Aristotle's view), earth is potentially bronze, and bronze is potentially a statue, but earth is not yet potentially a statue. One thing is potentially something else only when the latter will be the result of a single process or activity in which the former can engage; but if several processes or activities are neces-

[4] This would be an important point in a discussion of Aristotle's theory of time. For if time is "number of movement in respect of the before or after" it is not number of simple or pure activity; and the latter can only be considered temporal by correlation somehow with an order established on the basis of movement.

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sary (as earth becoming bronze, bronze a statue) we can not significantly speak of potentiality.

This conclusion is of the very greatest importance, for it shows that the concept of potentiality and all that depends on it may not be stretched too far. Hence the concept of the nature of anything as a pattern of potentialities can not be carried more than a step from the situation which is the exercise of these potentialities. As a result, a nature remains a pattern of specific potentialities, potentiality is always for something determinate, and there is an inevitable plurality of natures; though no doubt it is possible to trace a hierarchy of common characters. But potentiality as such, becomes meaningless, unless referring to the connection of subjects and the activity for participation in which they already contain grounds without having first to undergo other processes. Potentiality is, so to speak, only for one step at a time.

The third type of potentiality which we are considering is based on the peculiar characteristic of the type of series noticed above, viz., that the same process is repeated and is due to the same set of conditions as the previous term in the series with only the added condition that the previous term be complete, i.e., that the previous movement be actually done. The examples given by Aristotle are day, the Olympic games, the generations of men, the division of magnitude (*Physics,* III–6). There is day both in the sense that it is actually a day now, and in the sense that when one day is done, another follows inevitably after an interval from the complex system of conditions which generated the previous one. Strictly the ground of the terms of the series (and therefore the potentiality) lies not entirely in the preceding actual terms, but in the system with which the terms are inextricably bound up, day with the revolutions of the earth in relation to the sun, the Olympic games with the religious beliefs of the Greeks and their conventions about the expression of these, the generations of men with human nature, physical structure, desires and capacities and their mode of expression, together with terrestrial and social conditions, and the division of magnitudes with the nature of magnitude as continuous and the will of the divider to continue in practice and thought.

The manner in which this type of potential existence differs from the second kind is that it can never be completely actualized. The potential existence of the statue in the bronze is actualized when the movement of the sculptor is finished. But day, the Olympic games, the generations of man, the division of magnitude, have no completion as such. It is true the earth may change its course, the Olympic games be abolished, man completely wiped out, and mind be weary of division and cease to think of magnitude at all. The

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supporting system of conditions may be swept away. But this is as irrelevant to the discussion as the death of the sculptor and dropping the bronze to the bottom of the sea. The point is that given a certain system of conditions found within existence (but like all existence, of course, subject to change), the type of movement resulting repeats itself continually. The simplest instance would be the swinging pendulum freed from the friction of the air. Given the force of gravity, the down-swing conditions the up-swing, the up-swing the down-swing, and so forth. Continuous repetition of a process, then, is an actualization which is always going on but is never complete. The potential existence, which is therefore the third type we have discovered, differs from the others in never being completely actualized.

This ends our rough analysis of potentiality and its chief types. To carry it further would lead us too far astray though the path is full of interest. There remains, for example, the analysis of the cognate concept of power, the derivative concepts of ability and capacity, and of possibility, perhaps even of probability on this basis; then the growth of the concept of responsibility from that of ground and chief ground, and its final application in ethics. An interesting semi-linguistic, semi-logical study would be the examination of terms and concepts involving potentiality in their meaning, especially those which have suffered from concretion or reification due to a "qualitative" approach. For the present it is better to turn back to the three conceptions of the infinite which a philosophy of the determinate must explain in its own terms. Let us therefore see how far these have been clarified by the analysis of potentiality. In part too they will serve to complete it.

### 1. The Infinite as Actual

While hitherto this might be shown to be impossible by many proofs in *reductio ad absurdum,* now the nature of the infinite as potential supplies a positive rebuttal of its claims. For the true character of the infinite may be understood from the third type of potentiality of which it is the chief illustration. The infinite is not potential as the visible, which may actually be seen, nor as the building-materials which may actually be used up, but the nature of the infinite is that the process implied should never come to an end. (This is why the actualization of a potential infinite is impossible, e.g., why a line can not be composed of an actual infinite number of points.) Nor is this "never" a mere conclusion from the fact that it has not yet come to an end, but a recognition that each step in the process, each term in the series, is such as to imply the possibility of the next. The attribution of infinity implies this proposition establishing a universal and necessary connection. Only

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this can generate a necessarily unending series. But infinity is not primarily attributed to the process; rather it is a character of the determinate subject within which or about which the process takes place. Only derivatively can it be referred to the process. If therefore one were to ask what it is which is infinite, the inevitable reply is not any actual infinite, but the finite or determinate subject; and it is called infinite because it contains the ground of some process which is such that each term in it would imply the possibility of the next. Given such a situation, we predicate infinity of the subject. The emphasis on the necessity of a determinate subject for the proposition in which infinity is ascribed, leads to important conclusions. For one thing, it shows that the infinite is potential, not actual; still more it does away with the strict and exhaustive disjunction "finite or infinite." For it shows that finite (of quantity) is just one type of finite in the sense of determinate; and that infinity is not the opposite but is a character of the finite. Certainly Hegel's language implies the same, when, for example, somewhere in his *Philosophy of History* he speaks of man, finite when regarded in himself, being at the same time "a fountain of infinity in himself." On the other hand, it might be claimed that in the sense in which finite and infinite are opposed as an exhaustive disjunction, finite presupposes infinite, since it acquires meaning only from the act of stopping short in a series in which each step implies the possibility of the next. In that case finite must be distinguished altogether from determinate. The latter is then prior to infinite, which in turn is prior to finite.

On this theory, then, infinity is a character of some determinate subjects, in virtue of which they participate in certain types of activities and hence of situations, viz., those in which the same process is repeated and each term of the series implies the possibility of the next. Thus to predicate infinity is to ascribe to a subject a type of potentiality. But potentiality, we have seen, is a concept derived from and referring to situations. Hence infinity can not be opposed to the determinate. Any actual infinite in this sense is therefore an unwarranted assumption, that is, simply an unmeaning exhibition of impatience in wishing to traverse what by its very nature can not be traversed. The infinite can not be actual either as an attribute of any ultimate stuff of some other nature, nor as the complete actualization of a potential infinite. Perhaps it may be the ultimate stuff itself, or the ultimate subject.

## 2. The Infinite as Ultimate Subject

This position may seem to establish itself firmly by a criticism of the situation as outlined above. To receive it at its strongest, let us put it into the form of an accusation:

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"You have not," it will run, "carried your analysis of the situation far enough. For you have been content with the distinction of activity and participating subjects as if it were ultimate. You have been emphasizing too much the activity. If you consider the subject, it is obvious that determinate can not mean the same in its case. You would claim that as far as the subject is concerned, you need only describe what it is and what it does, i.e., the character of the subject and the types of activities in which it may participate or situations it may enter. No doubt you may find support for this view in Aristotle, who in the *Posterior Analytics* gives as the two branches of an enquiry "if it is" and "what it is," and the latter being the nature of the thing refers to its potentialities, i.e., what it can do. Spinoza too may seem to support you by his frequent coupling of "exists and operates." But these also provide the correction of your view. For the character of the subject is just this nature or this pattern of potentialities. To describe the determinateness of the subject by giving what it is and what it does, is tautology. For it *is* what it does, i.e., that is its nature. Therefore we are left more as the above remarks of Aristotle and Spinoza would indicate, with the distinction not *what* it is and what it does, but *that* it is and what it does. This means that the subject as distinguished from its activities is just subject and can in no other way be determined. Hence it is the real indeterminate which is presupposed by the determinate situation.

"Or, to look at it in another way, the distinction between what a thing is and what it does, may be taken to arise from and refer to any single situation. Here what it does is the activity of that very situation; what it is is the pattern of potentialities for other activities, for other situations into which it may enter. For the analysis of potentiality began with the assumption that subjects participating in any situation and making the whole actual, have an existence outside it. But on the philosophy of the determinate, this can only be in some *other* actual situation. Therefore the distinction is one of levels within the field of activities, rather than of activity and a subject which is something else. In *Axb*, *A* must mean 'the thing that does *p, q, r. . . .*' That is, *A*, in so far as it has any determinate character, is known as a subject in other determinate situations. The implied belief is that there can not be an activity without there being that which is active or participates in it, just as there can not be a relation without terms related. But if the subject is made determinate only by the possibility of description of the activity, it is not in itself determinate. Nor would an account of the 'ground' of any activity be sufficient; for it involves other activities. Ultimately even to call anything only a

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colored thing means it is a subject capable of entering into the seeing-and-being-seen situation. So too the search for a prime matter underlying all things was a search really for a single type of motion or behavior involved in all situations. In the same way molecular and atomic analysis can yield no subject, but only types of operation or activity, that is, types of situations. All these, it follows, can not be said to characterize the subject in itself, but only to be its activities. At every step in the analysis the subject recedes. But it can not be eliminated. If our knowledge is almost entirely of the determinate, that is, of situations and their common characters, it gives us no reason to deny reality to subjects which are known only in these activities. These subjects are indispensable to the understanding of the situation, and as we do not know them in themselves, we are at liberty to speculate whether they may not all be one; at least we know no other character than the common one of being subject. Here then is the real infinite, the indeterminate, the ultimate absolute subject."

This criticism of the philosophy of the determinate contains much that is true and nothing that is unimportant. But it rests on certain assumptions which must not be overlooked. Its criticisms are one thing, its constructions another. The latter assume quietly that there is a relation between the subjects and their activity, hence that they have an actual existence apart from all activities (on the ground that terms exist independently of the relations they enter into). This leads to a similar position to that in which Locke found himself when on assuming qualities as independent he was at a loss to discover what they inhered in (where inhering was their relation to the subject, a relation whose meaning Berkeley rightly challenged). But, as we saw in discussing the situation, there can be no relation of subject and activity, nor is participating in an activity itself an activity. Rather the categories in which the description should be made, are potentiality and actuality. The situation is the actuality. The subject is not a something outside the situation, nor is the latter an attribute of it. A subject is never anything but a subject *of* or *for* some activity. This, incidentally, provides the activities or groups of them as distinguishing marks, entitling us to acknowledge the plurality of subjects. (And if there is no determinate subject which is the whole, and no determinate activity of it, we are not justified in assuming an ultimate actual subject.) The subjects therefore are the potentialities of the situations. Lest this seem circular, since potentiality was explained with reference to subject, we may put it as follows:

Any particular subject is known through an inference from various situations. Each contributes to our knowledge of the subject, but

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not as something beyond. An analysis of any situation shows us things actual in a determinate way. The only implication is that they may be actual in other determinate ways. Hence the conceptions of potentiality and of subject (and thus of its nature) grow up *pari passu* from experience of and thought about situations, i.e., from our own participation in certain types of situations. Reflection on any situation, therefore, reveals actuality and potentiality. But this all comes from the analysis of situations, nor reveals anything prior. Thus, whatever difficulties still remain, are within the field of the determinate. An infinite in the sense of ultimate indeterminate subject is not implied by the situation.

### 3. The Infinite as Substance or Nature

The issue here is twofold, (*a*) whether situations imply nature as prior, or nature implies situations as prior, and (*b*) whether there is a plurality of natures, or how far nature can be conceived as one and infinite so that all flows from its potency.

(*a*) This is a difficult problem having many obstacles to its solution. Certainly the Aristotelian conception of a thing's nature as that in it which determines it to action, i.e., as a principle and cause of motion and rest, is open to ambiguity in interpretation. Its nature must not be conceived of merely as a group of universal or general laws of its behavior (even though as Aristotle recognized, it is because we observe these uniformities that we call this behavior natural and others unnatural). For laws of nature themselves do not determine to action, but describe a state of affairs in which there is such determination, nor are laws nature, but laws of nature. That in a thing which determines it to action is itself part of the thing. The difficulty becomes clearer with a simple illustration. What determines a knife for cutting is the very acute angle made by its two sides, also the hardness of the material. These two attributes are therefore the elements of the nature of the knife, which means simply that in virtue of these, the thing which has also other attributes, participates in the cutting activity. It means too that all things which have these attributes are so far knife-like, and all things which are constituted so that these are the dominant properties, are knives. And to speak of these being the dominant properties means that the thing has not such a large share in any other activity as it would have in cutting.

Taken with reference to the thing merely as a thing, these two attributes have no priority over their fellow-attributes. But they do constitute all that is common to things which play a certain rôle in the cutting activity. Hence they are the grounds for the activity, and their subjects are knives, or so far knife-like. To decide which

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of the latter anything is, obviously one would have to know the types of activities it can participate in, and if cutting were its chief one, or a complex one from which the others result by vertical division, it would be a knife. Nothing, in a sense, prevents a thing from having several natures. But its proper nature, as such, is a pattern culminating in its peculiar one. (Similarly, the proper species of an individual is the infima species, not any sub-genus.) Thus man is as capable of participating in the activity of stopping bullets as he is of thinking. Yet we call the one more adequately descriptive of human nature, because he need only be an extended solid to take part in the other.

It is clear that a classification of natures is at bottom one of potentialities for types of activities. This is what we meant by speaking of a nature as a pattern of potentialities. Things are grouped into a class because they participate in the same kind of activity (in one or many). Then the grounds within them for that activity are ascertained. These constitute their nature, not merely as attributes, in which position they enjoy no superiority, but as *attributes which determine the subject for its chief activity or activities,* i.e., as grounds. A nature is therefore a pattern of grounds, (remembering that ground means ground for). In the knife, the nature is readily discoverable since its chief potentialities are few. Man's nature is exceedingly complex, and any attempt to limit its description (as when his nature is said to be to glorify God, or to develop his thought, or to eat, drink, and reproduce) is inadequate because the limitation is arbitrary. To discover his nature one must examine fully the types of activities in which he is capable of participating.

Such a search in a complex being can proceed simultaneously in two directions. Actually observed activities lead to an examination of grounds, and grounds elsewhere learned lead to an inference of possible activities. This brings us to the question with which we began here, whether the situation implies nature or *vice versa.* Certainly at first sight the result of the investigation may seem to be that the situation is prior, and that natures resting on grounds, are inferred from and refer to situations. This, however, leaves us open to the charge of committing the genetic fallacy; for natures, though inferred, may be apprehended as prior. On the other hand it still remains true that grounds as part of a nature are not mere attributes of the subjects, but grounds for some activity. The most likely way out of the difficulty is to recognize that our question has no clear meaning. For we have not in considering natures (just as before in considering subjects) really stepped beyond the bounds of the situation. Its analysis led us to recognize within it the one activity

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and the various subjects with their grounds for that activity. A pattern of these grounds constitutes the nature. And usually the whole nature may be considered the single ground within the subject of a complex activity, whereas the various grounds which are its elements are severally grounds for activities into which the complex one is vertically divisible. Such is the case, for example, where "living" is the single complex activity of the subject man, and human nature its ground, divisible into elements which are grounds for the manifold human activities.

If this is so, it is vain, having distinguished two aspects of the situation, each of which implies the other, to ask which is prior. To demand priority for the nature would be a similar mistake to asking priority for a subject as distinct from any of its attributes. The error again would be the transcendental application of immanent concepts.

(*b*) Having clarified our conception of a nature, it remains to examine how far nature can be one and infinite in the sense that everything determinate flows from its potency. If our analysis of potentiality and of nature has been correct, this can not follow unless the world may be considered a determinate subject, the sole participant in a determinate activity. For a nature was found to be a pattern of potentialities in a single subject for a determinate complex activity; and so there can only be one infinite nature (infinite indicating that it is not for any single activity, but for all possible ones) if the world is a determinate subject, and all that happens be considered the determinate activity of "happening," i.e., "reality" the subject and "being" the activity. But as we have seen, the world is not a determinate subject, nor is there one all-embracing complex activity, vertically divisible into the various activities we behold. Furthermore an activity is scarcely possible with only one participant. Nor should it be claimed that the world has a single activity, even if it be not all-embracing, since "happening" is a common character of all situations, or what amounts to the same thing, fitting into or being a situation is common to everything. For this rests on a confusion of nature with what is common. As we saw in discussing the example of knife, it was not solely because two attributes were common that they constituted the nature of knife, but because in addition they were grounds for the dominant activity. Hence to be common does not necessarily mean to be an element of the nature. We may speak of a nature only if there is a pattern of grounds or a single potentiality. Now things are thinkable (or conceivable or knowable) in so far as they have elements in common; it is often repeated that the mind's task is to apprehend unity in plurality. Thus in one sense what is common constitutes a

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ground, that is, for the activity of thinking-and-being-thought. But since being thought is not, unless perhaps on an Idealist position, the dominant activity of any thing, being common to things need not by itself mean belonging to their nature. "Being common" is related to "belonging to their nature" as genus is to species, and the differentia is "being also a ground for the dominant activity." It follows, since being a situation is not itself a situation, nor being an activity itself an activity, that all situations have a common character, but not a nature. The latter term may only be used by analogy with reference to thinking as the activity. Similarly the instances of a type of activity, e.g., cutting, having something common in virtue of which they are thinkable, but not strictly a nature. Knives have the same nature, and since nature is a species of the common, are thinkable in virtue of their nature. Let us set aside the term "structure" to mean that which things have in common in virtue of which they are thinkable. This raises its own questions such as wherein lies the unity of a structure; but since the problem of structure is intimately connected with that of method, we shall postpone it to the discussion of the clarification of situations. It is sufficient to note here that whereas all situations may have a single structure, such as the one we have indicated, they do not flow from their structure in the sense in which things do from any nature (which is a potentiality of the subject), nor are determined by it. Therefore the uniformities exhibited by things in so far as they manifest a single structure such as being a situation, or such as the so-called laws of thought indicate, differ from the uniformities of behavior on the basis of which natures are inferred. The nature of a thing explains its actuality and determines it in a sense in which its structure does not. Indeed there is never a question of structures as such [5] determining that of which they are the structures.

We may therefore conclude that if our analysis of potentiality has been correct, there is no meaning to the phrase "one infinite nature from whose potency all things flow." Thus the determinate as such implies no infinite in any of the three senses suggested. These are either meaningless, or (chiefly) explicable as arising from and referring to situations and losing significance without this reference.

If it be complained that this investigation points towards the impossibility of any ultimate explanation for which the mind may crave, it can only be said that the slow steps of self-restraint and constant enquiry as to meaning seem of more value than comforting though rash assumption. Again, a philosophy of the determinate leaves the door open to further determination, which will itself

5 "As such," means unless it happens to be also the nature.

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reveal its end, if and when it does end; and this will be learned only in the investigation of particular situations. Finally, it points toward a method of clarifying our ideas, which is at the same time a method of clarifying situations. Its examination will be found to coincide with an analysis of the thought situation itself.[6]

ABRAHAM EDEL.

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## TAKING THE CAUSAL THEORY OF PERCEPTION SERIOUSLY

I PROPOSE in the sequel to take the causal theory of perception seriously, and to let the argument unfold itself, like a system of mathematical propositions, from intelligible though undefined primitives, with as little taint of traditional preconception as possible. My method will be to accept as facts what appears to most of us in our unsophisticated moments to be facts, and to render their primary intelligibility more explicit in symbolical discourse. It should be clear from this statement that the method is not the (what-should-be-by-this-time-outworn) method of doubt. Any real, intelligible fact is, in virtue of its reality and intelligibility, dubit*able*. For the satisfaction of those who like to know the end of the story before they begin at the beginning, I shall state the conclusion to which I have before observed the argument lead itself in my intellectual laboratory: the causal theory of perception is one which renders intelligible the fact of *direct* perception. Now let us follow the argument to this unorthodox conclusion.

Accepting as our intelligible though undefined starting-point the fact of causal transaction, we enquire into what this involves. (1) Where there is no spatial interval between the cause-term and the effect-term (henceforth these may be referred to as $C$ and $E$ respectively) there can be no causation-relation (symbolized by $>$ or $<$, $C > E$ meaning that the cause progresses into the effect, and $C < E$ meaning that the effect regresses into the cause). Only as long as $C$ and $E$ can be said to be spatially distinct or "other," i.e., *two* entities or events, can the relation $>$ hold between them. Even though it be true that $C$ and $E$ be spatially coincident in one reference-frame but not in another, we still assert that $>$ possesses no physical meaning in the reference-frame in which the loci of $C$ and $E$ exactly coincide. We find in the first place, then, that spatial otherness is involved in causal transaction.[1] Let us call this an aspect of

[6] To be concluded in next issue, No. 4.

[1] Cases of immanent causation appear to be exceptions. Transeunt causation or *trans*-action obviously involves space-intervals, but a single term, enduring in time at one place, may also be at one moment the cause of what it is

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the extensional structure of causal situations. (2) In the absence of any temporal interval between $C$ and $E$, $>$ again becomes a physically meaningless symbol. The assertion of the absolute simultaneity of the causally related events $C$ and $E$, admitted to be spatially removed from one another, is an assertion of infinite velocity, which is no velocity—in the sense of *transition*—at all. Being in two places at once is neither effluence nor influence, and causation that is neither effluence nor influence may be a kind of logical implication between propositions of an extra-temporal order, but it is not the physical operation of one fact upon another. Besides, relativity physics finds that no physical influence has infinite velocity. It might here too be remarked that though two events may be temporally non-coincident in various reference-frames in which the symbol $>$ could be said to possess physical meaning, yet in the frame in which they coincide temporally they can not be said to stand in the relation $>$. We discover then in the second place that $C$ and $E$, in a genuine case of $C > E$, must be differently dated. This temporal otherness is also an aspect of the extensional structure of causal situations. We shall not in what follows engage in the futile effort *temporally* to identify $C$ and $E$ where they function as terms in perception. Neither shall we fall back on the untenable concept of temporal continuities—the same futile effort in another dress—after having so clearly observed the atomization, to use Whitehead's phrase, wrought by the spatialization and temporalization of fact. Let us call this spatio-temporal otherness of particular existents the extensional dimension of nature. In so far as there are terms and terminality, and "incurable atomicity," nature will exhibit an extensional structure, and can rightly be read in extension. And if the extensional dimension were absolute, we could with Newton speak of space as a rigid, mathematical receptacle comprised of absolute points or positions, loci which would satisfy the ideal of terminality absolute. To contend that such a conception, however, does not possess physical meaning is to introduce and legitimatize a natural dimension other than the extensional. (3) Where there is no continuity between $C$ and $E$, there is no case of $C > E$. That is, unless there is some genuine connection between $C$ and $E$, unless in some sense the being of one participates in the being of the other, there is no physical causation. Now we have forewarned ourselves not to seek continuities in extension. The extensional, with its space-

the next—granting a "next"—moment. Do we here have $>$ without the space-interval? Yes—only if position is absolute and independent of the time-factor. This not being the case, it might rightly be contended that even here there is spatial otherness, though the interval between $C$ and $E$ in such cases is more obviously of the temporal order. Our argument is concerned with the kind of causation that is unmistakably transaction.

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time, is the terminal. And in so far as the extensional is also properly the mathematical,[2] there is no mathematical continuity. As long as there is, rigorously speaking, a term or series of terms, there is, by definition, a "next," hence in *this* sense no continuity. Mathematicians themselves teach that the continuity of a "compact" series is not essentially of the terms qua terms, but of the order. For should the continuity infect the terminality of the terms, they would be dissipated, nor could they then be rearranged into various discontinuous series.

At this point our argument unfolds into the proposition that, besides the extensional, there must be an intensional dimension of nature. That probably is what even the mathematical physicists are finding out in quantum mechanics and in relativity research generally, though they have not as yet systematically recognized the intensional structure of physical existents. The Principle of Indeterminacy and the General Theory, in affirming the absence of any absolute "where" or "when," i.e., in denying absolute extension in our sense,[3] are merely stating that to read fact in purely extensional terms is to omit something factual. It is to get into the difficulties that one encounters when one reads classes "in the *pure* extensional way."[4]

But to return to our theme of the moment. If the causal relation > has an ontological status, this means that there is a genuine and natural community of the terms *C* and *E*. It involves the existence of a *continuum* of causally efficacious events. Let us without further ado call this feature of communion, this characteristic of being beyond extensionally determinate loci and dates, the "transitive being" which any physical existent enjoys or suffers. And such transitive being, which we shall also call logical, is in virtue of what we have named the intensional dimension of nature.

[2] Ramsey, "The Foundations of Mathematics," *Proc. London Math. Soc.*, Series 2, 25, 1926, p. 349. "Mathematics is essentially extensional." Ramsey distinguishes "functions in extension" from "predicative functions," which distinction is not unlike the one I make below between extension and intension. But this would become clear only if I isolated the intensional structure and formulated it in purely logical propositions.

[3] With reference particularly to quanta, I should suggest that the attempt to reconcile corpuscularity with undulation would become less embarrassing if the physicist would recognize a dimension of "wavicles," which is, taken strictly, neither spatial nor temporal. This intensional or logical dimension would constitute the "transitive being" (undulatory property) of the wavicle, and the extensional its corpuscularity. See below.

[4] Russell, *Introduction to Mathematical Philosophy*, p. 183. Italics in text. The reader has noticed by this time that I am assuming a connection between extension in the logical sense and extension in the physical sense. It is my belief that the extension of general terms is but a symbolically rarefied physical extension, which is the discreteness and particularity of perceived things. But this is matter for another paper.

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In the interest of those who are beginning to balk at the turn the argument is taking, another proposition formulates itself, namely, that the only way to make sense of the statement that a past and spatially remote cause is *now* operating *here* in this effect is to discover and legitimatize nature's intensional structure, whereby that which exists no longer in a mathematically determinate extensional present may nevertheless be operative in such an extensional context. If we hold to the fact of causation, we cherish the belief that what *exists* no longer according to an extensional reading of the situation *is* none the less. And to *be* in this second sense is not to be in the extensional sense. Hence the recognition of intension, of a continuous progression of cause into effect ($C > E$) and of a continuous regression of the effect out of the extensional present into the past cause ($C < E$). So in the third place, we recognize the continuities involved in all causal transactions, describe them as intensional, and distinguish them from the spatial and the temporal features of fact.

What we have *not* done, it should be remarked, is to attempt a spatial or temporal identification of $C$ and $E$.[5] That would have forced us in the end—as it has most analysts of causation—to jettison the whole concept of real transaction as unfathomable nonsense. Neither did we begin, it should be no less remarked, with the notion of *absolute terms* interacting, and then try to explain continuity. Rather, we indicated the extensional structure of nature, whereby things have fairly definite loci and dates, and we sided with contemporary physics by contending that extension, or the terminality of terms, is but one aspect of existential situations, an aspect which may be *completely* isolated by mathematical analysis only at the loss of physical meaning. We did not begin by reading causal series, as Hume did, "in the pure extensional way," for it would then have become positively false to assert that $C$, at a spatio-temporal remove from $E$, influenced it. Where there are "nexts" there is, in *this* sense, no continuity. From the point of view of pure extension, Hume's statement stands unimpeachable: "Nothing can operate in a time or place which is ever so little removed from those of its existence."[6] To recognize space-time factors (the extensional) only is to preclude causation.

[5] D. W. Gotshalk, in an article entitled "Causality as an Ontological Relation" (*Monist*, April, 1930), defends the view that there is "existential continuity" between $C$ and $E$, meaning thereby that there are no spatial or temporal "rifts" between causes and effects. If this implies that they are spatially and temporally continuous, then it becomes false to assert that space-time *intervals* are necessary to causal transaction, and this to me makes nonsense. But Gotshalk falls in with a long line of venerable thinkers when he makes nonsense of causality.

[6] It may be seen from this remark that, for Hume, existence meant extension

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The result so far is that $C > E$ involves (1) spatial intervals between $C$ and $E$, (2) temporal intervals between $C$ and $E$, and (3) logical participation of $C$ and $E$ in one another, in the double sense of $C > E$ and $C < E$. (1) and (2) constitute the otherness or extensional structure of the causal situation, and (3) its intensional structure.

Consider first the case $C > E$ where $E$ is an event in the system of events comprising what common sense calls an inanimate body. $C$ participates progressively in $E$ and $E$ regressively in $C$. Hence there is logical community even on this level of physical transaction between inanimate terms. But the behavior of such terms is what classifies them as "inanimate," and it is important to determine in what this behavioristic difference consists. A body that obeys the physical laws of motion so precisely as to render its behavior predictable with mathematical rigor is indeed influenced by other bodies remote from it in space and time, but—and this is the point—the *immediate* cause of its behavior is the event or set of events that is infinitely near it in space-time.[7] Because it is not immediately motivated by appreciably past and distant factors, its behavior is mechanical. This is the meaning of "inanimate."

Consider now the case $C > E$ where $E$ is an event in the system of events comprising an animal organism. Here again $C$ participates progressively in $E$ and $E$ regressively in $C$. $E$ in the case under consideration is a percipient event, and there is logical community of the terms. What is it that characterizes $E$ in such a situation as a *percipient* event? Let us turn again to differences involved in behavior for the distinguishing mark. An "animate" body is one the *immediate* and predominating cause of whose behavior may be an event or system of events appreciably remote in space-time from the organism. Where $E$ occurs in a highly sensitive body such as the animal organism, it places the organism directly, by intension, in the object of which $C$ is a factor. This is awareness. Awareness is a complex of two terms ($C > E$) with the relation of intension between. We have not suddenly and *sub rosa* introduced some entirely new dimension. We state merely that whereas in the case of inanimate bodies an account of their behavior did not need to contain a specific reference to their logical community, here in the case of

absolute. Before there could be *order* (see above comment on mathematical continuity) and causation in such a milieu, some mind would have to be introduced to deploy the particulars psychologically in various configurations. Kant's innovation consisted only in holding that such mental performance was logical.

[7] According to the differential law of the General Theory, "events at one point in the space-time manifold depend only upon the events of points infinitely near it on all sides," where one precise moment (date) of the event is in consideration. See Schlick, *Space and Time in Contemporary Physics*, p. 64.

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animal organisms of a sufficiently sensitized type we do indeed have to point specifically to the continuities involved in causal transaction, and state that here the transitive being (regressive) of *E* is overtly enjoyed or suffered by the organism. The percipient organism can be *immediately,* by intension only, in a past and distant object. The qualifying phrase "by intension only" is important, because it suggests the truth that such transitive being is not prejudicial to the extensional context of the organism in which the latter, as a term, is determinately located and dated.

To be directly moved by what lies beyond the space-time boundaries of the organism is to exhibit animation. And to be immediately by intension in a spatio-temporally remote datum is to suffer logical being. To be sensitive to the logical community of particular existents in such a fashion that this awareness becomes an additional factor in behavior is already to be intimate [8] with bodies and events that lie beyond the space-time peripheries of the organism. It is to "have," not merely to be, a body. The stone does not "have" a body, but merely is one, because there is nothing appreciably beyond the stone that it can *immediately* claim as its own life-history, and because it can not directly be out of and beyond its body to possess its body.

The argument through these last steps has been revealing to us that (1) the sense in which the cause is progressively in its effect, and the sense in which the effect is regressively in its cause, is not the extensional one; (2) the sense in which the cause is continuous with the effect is the intensional one; (3) the sense in which the cause is directly in, and communicates directly with, the effect is the sense in which it functions as the datum in perception, where the effect is a percipient event.

To illustrate the third step: I am observing Jupiter. The Jupiter that I directly perceive is, as located and dated in an extensional frame, approximately 390,000,000 miles from me and already roughly 34 minutes past with reference to the percipient event in my organism that communicates me with it. Extensionally, therefore, I am decidedly other than what I perceive, and no one can deny the two-fold interval that separates percipient event and perceptum. But when it is asserted that because perception must in order to occur be faced with space-time intervals just like any genuine causal transaction, therefore perceiving can not be direct, we must answer that by "direct" perception we never did mean *extensional* immediacy. Such immediacy is a kind of juxtaposition and simultaneity that never yields genuine continuity and community and always obliterates perception, which requires real space-time in-

[8] Cf. the Latin *intimare* = to press into, to install in.

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tervals between percipient and perceptum. We meant rather the only kind of directness that can characterize terms in causal connection, namely, the intensional. In order to make perception direct, we do not locate and date the datum of perception in or about the region of the retina—extensional immediacy—but rather disclose the participation of $C$ in $E$ and $E$ in $C$ which, to use Lovejoy's words, circumvents the space-time interval without annulling it and places the percipient immediately in the past and distant $C$.

The behavior of animated bodies is not mechanical, i.e., predictable with mathematical rigor, because what motivates an animated body involves the logical (intensional) in addition to the mathematical (extensional). That which directly moves the animal organism may be nowhere or nowhen in its immediate spatio-temporal vicinity. Hence the logical pivot for action, that by *reason* (not only be*cause*) of which the percipient organism escapes the circumscription of its extensional context and becomes rational.

The argument finally moves towards a conclusion. We have seen that objects in perception, receiving the date of those events in them which function as $C$, are past with reference to the percipient event $E$ which regressively $(C < E)$ puts the organism into direct communication with the percepta. Now past entities are not definitely any*where*—Caesar, for example. There seems to be a perpetual deliquescence of things out of contexts which are pretty rigidly spatial as well as logical and temporal into contexts which are only logico-temporal. If what is directly perceived is already a has-been, it will not appear in an absolutely mathematical space. The space that it will appear in will be shot through and radiant with logical significance, even as objects of memory—more definitely past entities—or of imagination are enmeshed in a logical network and imbued with "secondary" quality. Those who hold that this meaningful logical space is "imaginary" or "perceptual" or "private," and distinguish it from a real, public, physical space are plainly entertaining the old-fashioned belief that spatio-temporal existence is absolute extension. According to the result of our argument any real existent exhibits a tri-dimensional status. It is logico-spatio-temporal. On losing its spatial dimension, it ceases to exist in the full-blown sense and deliquesces into time and logic, which is the natural and objective status of past entities. With such objects the reminiscent organism may directly commune by intension after it has discursively determined their "logical places" in a natural logico-temporal context.

Having observed the argument unwind itself, let us comment on Lovejoy in order to round out the discussion and to clarify certain points that may possibly still be obscure.

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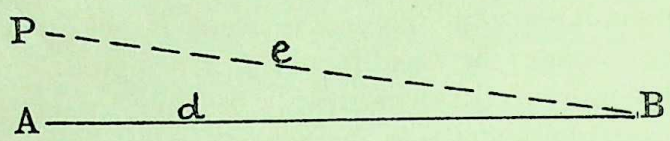
If Lovejoy and other physical realists feel constrained to call our third dimension a theological mystery, explicative of nothing natural, we need but point to a necessity that even the strictest dualism in the end recognizes and copes with. Let us diagrammatize Lovejoy's perceptual situation to drive home our argument.




*A* is the animal organism registering stimuli emitted from the physical object *B*. *P* is the set of emergent trans-physical sensa generated by physical agencies. *d* is a causal relation in space-time. Between *A* and *P* there is a one-way causation from *A* to *P*, but as this is a peculiarly embarrassing kind of causality, let us in all beneficence omit it from our diagram. *e* is *P*'s "transcendent reference," the relation of intending, a relation that is, physically speaking, nowhere and nowhen, and in virtue of which, things at last, on a supra-spatio-temporal level, escape their simple location and share in one another's being (*The Revolt against Dualism*, p. 321).

Now just what has Lovejoy done and under what compulsions? He has, by an analysis based on the concepts of Newtonian physics, extruded that essential feature of the natural physical world whereby things are not simply located. This he relegated to a psychical realm, being unwilling and unable to annihilate it altogether, and dubbed it "knowledge," that "phenomenon by which the simple location of things is circumvented without being annulled" (p. 315). And why did he feel compelled to do this? Because things in space-time do indefeasibly present a genuine otherness or stand-offishness, thanks to their spatio-temporal structure. But any natural, causally efficacious existent, or complex of such existents, exhibits also a no less genuine community, a structure by virtue of which they are not *simply* some where or some when. This is a conclusion to which contemporary metaphysics is invited to come by contemporary physics, whether or not the latter as yet recognizes a third fundamental dimension. Whitehead accepts the invitation, and suggests his doctrine of the extensive continuum.[9] Lovejoy rejects the invitation, and, to provide for the participation of individuals in one another's being, is obliged to make an exit from physical nature in which bodies are simply located, and enter a psychical nature where otherness is circumvented. In other words, all significant *reference* and all secondary quality—both of which constitute the two aspects

[9] Generally speaking, where Whitehead uses "extension" to denote the potential, continuous, and indeterminate, I should, in accordance with the terminology of this paper, write "intension."

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of what I call the logical dimension of things—are lifted by abstraction from the realm of real things and isolated in a world apart.

Now Lovejoy, arguing from the fact of causality, locates (?) the perceptum $P$ on the side of the percipient $A$ (in $A$'s perceptual space) and assigns it the same date as that of the effect of the reception of stimuli from the physical object $B$. Then, in order to re-establish community with the causal event $B$, which is past and distant, he postulates between $P$ and $B$ the logical—or epistemological—relation $e$ of "transcendent reference" or intention. He refuses this relation a status in the natural order of physical things.

We, arguing from the fact of causality, identify $P$ numerically and qualitatively with the past and distant causal event $B$, holding that the logical relation $e$ is already involved in the causal relation $d$. We contend that *if B really stimulates A, then in some sense the being of B must participate in the being of A,* and *vice versa.* Now, such continuity or participation can not possibly be spatial or temporal. $B$ certainly is not *where* $A$ is or *when* the act of awareness at $A$ is. Space-time constitutes their otherness-structure, and to assert immediacy in this sense of juxtaposition or simultaneity leads, we have seen, to disastrous dilemmas. Now, the sense in which the one is an immediate datum for the other is the sense in which $A$ intends, via its act of awareness (effect), the past and distant $B$ (cause). Thus, sensitiveness to the continuities of causal sequences constitutes perception, and perception is response to the logic of nature. In perception, the animal organism may be, by intension only, beyond its spatio-temporal boundaries. And it is in this sense that the *actual* effect of $B$ on $A$ is retrogressively in $B$, and that the *actual* $B$ is progressively in its effect on $A$. We might term these past and future potentials respectively. The being of both is logical and, in so far, they commune with one another.

Instead of lifting this logical structure out of the physical world, I have tried to show that it is identical with the intensional dimension involved in physical causation in space-time. The spatio-temporal structure I have called the extensional, and described nature as being, on the middle-ground of the perceptual situation, the fusion of the intensional and the extensional.

It should be clear by this time that I hold with Lovejoy that $B$ enjoys causal independence of the percipient event at $A$. It should furthermore be clear how *such independence is not an argument for indirect perception.*

We have said nothing about error. But a theory of imagination and perspective based on our doctrine of intension and extension (identity and otherness) would contain the wherewithal to explain error. It is not the purpose of this paper to construct such a theory.

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Let us conclude with a mere suggestion. If it is not *E* but rather *C* that is directly perceived in normal perception—the initial rather than the final term in the progressive causal series—in abnormal perception *E* does in fact become an unrecognized element in the part of the perceptual situation that constitutes the configuration of perceived objects, as for example in the case of the jaundiced eye. This, and the case of perceiving a green mountain as bluish through the medium of blue mist, are not cases of perceptual error at all in one obvious sense. But we must leave the matter here.

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## BOOK REVIEWS

*Knowledge, Belief and Opinion.* JOHN LAIRD. New York: The Century Co. 1930 (Century Philosophy Series). Pp. xi + 515.

To "believe" is a universal human experience. But only in English do we possess an adequate verbal expression for it. It has, therefore, been the privilege and historic duty of English thinkers to analyse the set of mental facts and epistemological problems associated with this experience,—a set of problems for which other people have no proper feeling or grasp. What is belief in contradistinction from knowledge on the one side, and mere opinion on the other? Is it a happy medium or a mild degree of assurance lying somewhere between full conviction and a vague conjecture? Is it at all a psychological term? Can it be measured by any degree of subjective feeling of assurance? (pp. 129–166). And what is knowledge? Is it necessarily conscious, cogitative, and evidential? Or is it (as Samuel Butler holds) like water for the fish, an expression of unhesitating adjustment, without foresight or afterthought, a really unconscious affair? Is knowledge at all definable? Or shall we paradoxically say (perhaps, with Mr. Cook Wilson) that it "is comprehensible only because it is inexplicable"? Is it a "sort of noetic insight," or merely a pragmatic response to "the experience of calamity"? What is its relation to doubt, inquiry, and judgment? (pp. 93–128). Does knowledge supply its own criterion, and is our self-consciousness a *conditio sine qua non* of every kind of epistemology? (pp. 58–90). If we agree to define knowledge as "evidenced certainty," what will remain of the territory of our "usual certainties"? In other words, on the strength of this definition, what, and in which sense, are we entitled to hold as certain (pp. 183–362), and what, and in which sense, as merely probable? (pp. 363–396). Would it not be safer to regard nearly all our primitive certainties as rational presumptions rather than as cer-

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tainties completely evidenced? (pp. 397–460). What is the nature of faith? Is it a matter of intellectual conjecture, a new kind of probability, or is it soteriological and communal (pp. 460–499)?

I hesitate to accuse Mr. Laird of having a definitely fixed position with regard to any of these questions, although he definitely asks them. Throughout the whole book he carefully and skillfully avoids the embarrassing (for a modern philosopher) necessity of committing himself to any "ultimate" truth, or even unreservedly formulated point of view. There is always a "but" to every "yes." And Mr. Laird appears to be a master of the long forgotten art of what the ancients used to call *aporia,* the art of discussing problems without venturing any solutions. Unfortunately, however, he differs from the ancients in that he is more of an historian than dialectician. In his discussions he seldom pursues the track indicated by the winding structure of the problem itself, but cultivates the art of philosophical perambulation, to the extent even of "losing his way," following the landmarks indicated by names, and usually English names. It is either Samuel Butler, or Cook Wilson, at best David Hume or John Dewey, in opposition to, or in agreement with, whom the author's views are formulated. It is largely his own reading, and not the territory of the problem itself, in which he takes pleasure to perambulate.

It is, therefore, by no means an easy task from the mass of historical references, personal doubts, and truly brilliant "discussions," to extricate what might appear as the ultimate conclusion, or fundamental idea, of the whole work. I think, however, it will be fair to say that it is Mr. Laird's contention that not merely knowledge, but also belief and opinion, are both logical; that knowledge, belief, and opinion differ from each other, not in the degree of (psychological) assurance associated with each of them, but in the nature and the amount of logically certified evidence involved. For, belief is not incompatible with even complete (psychological) assurance, and is frequently understood to imply this condition. A man who asserts his belief in God intends to assert his invincible conviction. Belief, therefore, is not inconsistence with full and unquestioning assent. It is only inconsistent with that kind of (fully evidenced) assent which characterizes knowledge. Only knowledge claims complete *evidence* (pp. 130, 131, 157, 185).

This principle of noetic completeness which is advanced by the author as a distinguishing mark of knowledge is, however, very ambiguous, and presents a highly vulnerable point in his argument. Apart from the insecurity of the boundary lines between knowledge, belief, and opinion, assumed to be fixed on this basis, it is not clear just what is meant by "complete evidence." What is the criterion

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of completeness? And how are we to know that in any given case the evidence is *not* complete? It may seem idle to ask such questions. They are so easy to answer. But they are meant here as a *reductio ad absurdum*. They are by no means easy, in fact—I think—impossible, to answer on the basis of the assumption just stated. If there is no alogical factor in knowledge (which, by the way, is the only thing that could possibly justify the existence of epistemology as a separate discipline alongside of logic); if knowledge is never a mere "sight," but necessarily an "in-sight"; if it means as much as completeness of logically certified evidence,—how can we *know* that portion of evidence which is not complete? By virtue of its incompleteness, it is not knowledge. And yet we know it. We know that it is incomplete. This kind of knowledge can not be an insight; it is a mere sight, i.e., facing a certain portion of evidence. In other words, without the alogical factor of mere "sight" we can not possibly claim any "in-sight." Intuitivism is just as necessary an ingredient of epistemology as is logism.

The book has deep and healthy roots in English tradition. It is an outcome of a long and obviously sympathetic study of Locke, Hume, and Mill, to whom lengthy discussions are devoted. Numerous other authorities are quoted, but almost exclusively from English sources. This is partly to be accounted for by the nature of the inquiry itself, inasmuch as it deals with the specifically English problem of belief; and partly—I feel—by the Forsytean temperament of the author who, with an obvious determination, misses no opportunity to emphasize Hume's priority to, and superiority over, Kant, or to allude to German tradition with a delicate and (one must admit) always effective humor. In certain respects, however, Mr. Laird's professional insularity is essentially detrimental to his own cause. On the whole, his work is in the nature of, and indeed an able contribution to, the phenomenology of knowledge and belief. And yet no mention is made of the Göttingen contributions to this field such as one finds scattered in Husserl's works, or in the (comparatively) recent contribution of C. V. Salmon to the elucidation of *The Central Problem of David Hume's Philosophy*.

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*Principios de Crítica Filosófica.* MOISÉS VINCENZI. Paris: Editions "Le Livre Libre." 1930. Pp. 223.

*Diálogos Filosóficos.* M. VINCENZI. Costa Rica: Tip. Trejos Hnos. Pp. 143.

The first of these volumes by the Costa Rican professor leans heavily on German and continental metaphysics, especially on Kant

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and Descartes, with a touch of Spengler, these masters still being powers to conjure with in Latin America. The main purpose of the author is to secure more unity in criticism through the revision of its scientific, philosophic, esthetic, and religious evidences and principles, and if he approaches the subject primarily through the maze of philosophy he does not neglect the facts of science. The present conflict of schools, he thinks, is clear evidence of the absence of any profound critical sense and of a poverty of critical principles. He believes that criticism grew out of the necessity of human adjustment and has developed as a function of life. After reviewing and criticising the various theories of criticism, including those of Kant, Boileau, Saint-Beuve, Taine, and Hennèquin, among others, he sets forth his own theory of criticism primarily in terms of the psychology of generalization, of the self, the unity of behavior, language, and logic. Self-criticism is treated with especial fullness, and also from the psychological standpoint of the functioning of the senses and of judgment, and from the standpoint of the social-environmental factors, such as climate, country, race, customs, culture, and social relations, which mould conduct. There are also two chapters on originality, in which the author sustains the theme that it is more difficult not to be than to be original in a highly complex and rapidly changing world like ours. In spite of the metaphysical terminology frequently used by the author, he handles his theme largely from a social-psychological point of view.

The *Philosophical Dialogues* are very well written, are in fact frequently very interesting reading. The setting is classical, the discussion taking place between Paul, the teacher, and Suetonius, the pupil. The themes include The Metaphysics of Unity, The Metaphysics of Knowledge, The Metaphysics of Liberty, The Second Dimension, Motion, and My Theory and Einstein's. Ordinarily the term "metaphysics" is here equivalent to social psychology and sociology. In the last three papers he sets forth a theory of relativity which he claims antedated Einstein's. He does not accuse the latter of plagiarism, but he does claim recognition for his own contribution, which he says has failed of general acknowledgment because he lacked opportunities for making it generally known. These two volumes are excellent samples of philosophical studies in Central America. The second volume carries an appreciative introduction by José Santos Chocano.

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## JOURNALS AND NEW BOOKS

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BULLETIN DE LA SOCIÉTÉ FRANÇAISE DE PHILOSOPHIE. 30e Année, No. 5. Mécanisme et Téléologie: Thèse, E. A. Singer; Lettres de A. Reymond, L. Robin et P. M. Schuhl.

BULLETIN DE LA SOCIÉTÉ FRANÇAISE DE PHILOSOPHIE. 31e Année, No. 1. La Science Orientale avant les Grecs: Thèse: *A. Rey;* Discussion: *A. Lalande, R. Lenoir, Xavier Léon, F. Marotte, A. Reymond, P.-M. Schuhl, Abbé Sesmat.*

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GIORNALE CRITICO DELLA FILOSOFIA ITALIANA. Anno XII, Fasc. V. La soggettività del reale secondo il fenomenismo: *Ferdinando Albeggiani.* La scepsi platonica (contin.): *Luigi Stefanini.* La filosofia mistica di F. H. Jacobi (cont.): *Bianca Magnino.*

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Thompson, Edward, compiler: A World Invisible. An Anthology of Religious Poetry. New York: E. P. Dutton & Co. 1932. v + 135 pp. $2.50.

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## NOTES AND NEWS

To the Editors of the Journal of Philosophy:

I was interested to note Mr. Eaton's remark, in the course of his review of Miss Stebbing's *Logic* (this Journal, Volume XXVIII, pp. 607–610) that *Principia Mathematica* is "the bible of the modern logician." May I suggest that Mr. Eaton's metaphor is singularly unhappy? In fact, it seems to me to be the one metaphor out of all that Mr. Eaton might have chosen, that he ought *not* to have chosen. For if there is one proposition true of "the modern logician," it is that he has no bible; and if there is one more, it is that *Principia Mathematica* is not his bible.

Let me anticipate misunderstanding on one point. I do not suggest, even by implication, that any other treatise in modern logic is of equal importance. But that is not to call *Principia Mathematica* a bible. After reading Mr. Eaton's own recent text-book, inspired so frankly by *P. M.*, I feel that there is a point about this business of the modern logician's bible. For if my memory serves

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me correctly, the original of Mr. Eaton's metaphor exhibits several characteristics which are emphatically *not* present in *P. M.;* and only by way of a concession, it would seem, in Mr. Eaton's own admirable manual. That original aimed—I still rely on distant memories—to set forth for any who were conscious of the frailties to which the flesh is heir, a better way of living; to draw the attention of its students to sundry ways in which one may fail to achieve the good life; and to encourage its readers in the hope of salvation. My apologies for all this. My only point is that anyone who should turn to *P. M.* (or the text-books which it is beginning to inspire) for light on the elementary principles of valid inference, for an analysis of sundry ways in which the mind falls into error, or for assurance that by taking thought he could order his inferences more soundly —such a one, I say, would be disappointed. In fact, the further he would read in *P. M.* (or its progeny) the less he might feel inclined to face a very simple question often put to one man by another, namely, "Is that logically sound?"

ALBUREY CASTELL

UNIVERSITY OF MINNESOTA

Dean Roscoe Pound of Harvard Law School is to give at the New School for Social Research, New York City, a series of twelve lectures on the Ideal Element in Law, its conceptual foundations in successive ages: Law as universal, authoritarian, in the Middle Ages; law as political and ethical in the seventeenth century—the nation and natural law; the law of reason in the eighteenth century; individualist law; the idea of rights in the nineteenth century; in the twentieth-century revival of the universal idea.

Professor Morris Cohen of the College of the City of New York will give six lectures at the New School on The Will to Illusion, in individual and social life, in science, literature, art, and religion.

Professor Sidney Hook of New York University will discuss at the same institution in a series of twelve lectures the Philosophies of History. He will analyze the systems competing for supremacy today, explaining how philosophies of history are crucially significant during periods of transition from one social order to another.

The newly elected officers of the Pacific Division of the American Philosophical Association are as follows: President: Harold Chapman Brown; Vice President: Donald S. Mackay; Secretary-Treasurer: H. G. Townsend; new member of the Executive Committee, Hugh Miller.

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THE JOURNAL OF PHILOSOPHY

# A STUDY OF A PHILOSOPHY OF THE DETERMINATE[1]

## III

### Structural Analysis

THERE has been implicit in our previous investigation a method of clarifying our ideas, which must now be rendered explicit; for it is advisable that a philosophy be self-conscious concerning its method, since in its metaphysical speculation at least, it can hardly rely wholly on demonstration. The further advantage inherent in a discussion of method is that it may in itself illustrate at the same time as it explains its subject-matter. And if the conclusion to which it leads is a full understanding, a *clear conception* of its nature as a method, then the process leading to such a conclusion must itself be one of clarification of the concept involved, here clarification. The method might therefore be adequately described as the *clarification of concepts*. In the popular tradition, however, such a process has usually been contrasted with investigation of things, as if it were investigation of thought. On the position here maintained, it is no more a clarification of concepts than it is of situations, since it discovers their structure, i.e., what they have in common in virtue of which they are thinkable. (This follows readily from an examination of the thought situation.) Since the structure is both of the concept and of the situation, the method may with more justification be called *structural analysis*.

Clarification itself is no mysterious process; no external light is cast upon the concept as a result of which there stands out its fully articulated structure. Clarification implies thinking, just as being grasped implies grasping. The manner of its accomplishment is, therefore, simply thinking about what is being clarified. At this point the popular tradition has made its mistake. "What is being clarified," it says, "is the concept. If structural analysis is the clarification of the concept by thinking about what is being clarified, it follows that it is the clarification of concepts by thinking about them. Hence it investigates thoughts not things."

[1] Continued from the two preceding issues, pp. 29–41, and pp. 57–69.



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No doubt it is possible to accept this position and maintain a self-contained realm of thought within which all implication is contained, nor does the realm as a whole imply anything beyond. But difficulties are many. "What," the objector may say, "do you really mean by clarification? It is a mere subterfuge to avoid the issue. To know whether a concept is clear is impossible. What test can be applied other than its clarity? But this is a vicious circle. And if, as a last resort, you take refuge in the position that a situation exhibits its own clarity, which apprehension of that situation itself guarantees, you open the way to irreconcilable differences of apprehension."

This is, of course, the old problem of the guarantee of knowledge, how we know that we know, whether any test does not itself require another test, and so on to infinity. Indeed, how can we ever know that we have added a column of figures correctly? To answer these objections fully requires a structural analysis of the concepts of knowledge and belief. This we can not now undertake; it is sufficient to point out that they are at their strongest with reference to the proposed definition of structural analysis. To correct this definition would remove for the most part, the grounds on which they rest. Hence we may enquire, (*a*) whether it is by thinking about them that in the practice of the analysis we clarify concepts; (*b*) whether, after all, and in what sense, it is concepts that we clarify.

(*a*) "The clarification of concepts by thinking about them," means by thinking about concepts, and since concepts are parts of our thought, it means by thinking about thought. We are threatened with a complete dualism, a separation of thought and the world, with the implication that it is possible to clarify a thought by making it the object of a second act of thought, and that structural analysis in being thinking about thought in no sense reveals anything about the real world. There is also presupposed a view of the concept which regards it in relation to the real as a static independent entity, in some way corresponding to it. But on this view that thought corresponds to reality can only be a preëstablished harmony, or believed by an act of faith. The analysis would be the making of analytic judgments (in the Kantian sense), extracting from the concept its hidden contents.

But the very process by which in ordinary life we clarify any idea, itself exhibits the opposite of this position. In that process we take instances comprehended under the concept, modify it according to them, and take fresh instances until it suits all relevant ones. We start with instances suspected to be relevant. The clarification may discard some, but it does so only by strengthening our

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apprehension of the grounds of relevance, and therefore may point to other instances not formerly included. Finally we pass from a vague idea of relevance suggested by a single element (or more) which some instances have in common, to a unified structure which all exhibit.

Hence it is apparent that we clarify concepts not by examining them or their marks, or what these marks imply, but by considering the instances or situations denoted by the concept. Starting from the merely relevant, we end with the common structure of situations, which is the conceptual structure, i.e., those situations as they are conceived or thought. This leads us to the second question:

(*b*) Whether, after all, and in what sense, it is concepts that we clarify. If in bringing a fuller understanding of the meaning we are clarifying the concept, then our analysis must purport to be primarily of concepts, only secondarily of things, if at all. In that case, even if we show the finer meshes of the network of related concepts under which we comprehend the world, we do not, *merely in so far as we clarify the concepts,* guarantee that our analysis is of the world itself. For example, we might dialectically decide that by "continuous" we mean, as Aristotle says (*Physics,* VI, 1–2), "those things are continuous whose ends are one." In the ultimately real, however, some might claim it inconceivable that what is two should in any sense be one. Clarification, it would be said, is concerned with meanings, and after all it is not things or terms or concepts that mean or intend, but we who mean or intend by them. Clarification or structural analysis discovers our "intentions," what we think; but it is not implied that it is its nature to discover the real.

Here again the actual process comes to our aid. For if the clarification of concepts is achieved by thinking not about them, but about that of which they are the concepts, i.e., the situations subsumed under them, if meanings are discovered by an examination not of meanings, but of existence (i.e., the existent), the position that clarification is *merely* of our "intentions" is seen to be but a partial truth. Nor can the strict dualism of *our* thought and *external* reality now be maintained. With this goes the static view of the concept. Since the examination of situations reveals their common structure, and since as the method of clarification it is found to give the conceptual structure, it follows that the structure of the concept is identical with, in fact is, the structure of the situations it denotes. But the latter is that which situations have in common in virtue of which they are thinkable. The concept therefore becomes the *thinkable as in the activity of thought,* that is, the existent in so far as it can be thought, while it actually is thought.

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Hence to say that the concept is clarified means that the structure of the situations denoted is clear to thought, that is, the situations, in virtue of their structure, participate in the thinking-and-being-thought activity. Clarification, we may conclude, is the discovery of the structure of situations by examining the various situations themselves.

We have come round once more to the problem of structure, considered in Part II with reference to nature. We saw then that a nature as a pattern of potentialities for a type of complex activity, belonged properly only to a subject, since potentiality implied a subject. Now it may be asked what constitutes a *type* of activity, in terms of which natures are understood. The answer can only be that activities are of the same type because their situations whose being and unity they provide, are of the same type. To say that certain situations are of the same type means that they have the same structure. Structure, therefore, belongs to situations, natures to subjects. Structures, too, secure their unity from the fact that they are structures of situations, which have unity because all within them contributes to a single activity. Further there is no relation between a structure and that of which it is the structure. It is the old problem of the universal and the particular, which we must not now enter upon. The chief point to notice here is that structure is primarily of situations, although the explanation may appear circular. For example, if we ask what is the analysis of the concept of "running," we are seeking the structure of situations in which that concept is applied and is applicable. The analysis must show (*a*) the subjects involved, here a living being and a surface; (*b*) the grounds within them, here in the one, legs and their relation to the body, in the other a certain hardness relative to the body, (*c*) the activity which the subjects and grounds characterize, that is, motion.

The important thing is that all this is an analysis of the situation, and all its factors emerge for the apprehension as a result of the clarifying process, depending on the whole situation for unity. They are not separate factors bound into a whole by a relation. The "relation" is that of potentiality to actuality. Nor does it affect the validity of the analysis that its terms themselves relate to other situations; for the determinate implies other determinates.

Primarily, then, structure belongs to whole situations; if so, these must be the proper field for clarification. The process is one of continual testing by instances, rejecting some suggested elements of structure and accepting others, determining more accurately the sphere of relevant instances, relevance and suggested elements of structure gradually and continually delimiting and determining each

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other, but *always reciprocally,* until the vague becomes the clearly articulated.

Our next step is obviously to see the process at work in the various types of concepts. This should reveal how far structure really belongs to whole situations, and where clarification is most effective. Therein also we may anticipate the possible objection that too much is being claimed for structural analysis as if on our view all thinking must be analytical in this sense. The types of concepts are enumerated roughly from the apparently simple to the apparently complex, whether it be a real simplicity or one due to a kind of abstraction. The enumeration is not necessarily complete.

### (1) *Quality Concepts*

The analysis plays a very small part in clarifying these. It is achieved only by repetition of the type of perceptive situation to which the quality refers. If we wish to gain a clear conception of redness, we examine, it is true, numerous instances of that color; but if we ask what they have in virtue of which we unify them under the simple concept, we can answer nothing but their possession of redness. Perhaps it is because, as we saw in the analysis of activity, seeing and the like are single simple activities, without proper beginning and end. Hence different kinds of sight situations, such as seeing red, are not capable of further structural analysis for which the apparent simplicity and immediacy of the color-judgment leaves relatively little place. (The same is true of the numerous qualities of sound, taste, smell, and touch.) In principle, the procedure by which the concept is formed is the same as that of analysis. But the structure, like the activity, seems simple and as such unanalyzable.

### (2) *Relation Concepts*

Strictly, these offer little more scope for our method. Identity and difference, if these be considered relations (whether they are is doubtful), seem to be apprehended immediately though the judgment about them may often require considerable preliminary clarification of that which is identical or different. If we examine what are the factors involved in the subject-matter in virtue of which identity and difference are predicated, we are forced to admit that we can find nothing more ultimate or simple than identity and difference. For there is nothing else in virtue of which we ascribe these characters. The same seems true of simple temporal and spatial relations, e.g., before, after, above, below, and some of the many relations denoted in ordinary language by prepositions or

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prepositional phrases. In the situations to which these refer, the activity or actuality seems simple, viz., maintenance of the simple relation.[2]

Other relations, however, imply for their understanding, complex situations. Even such an apparently simple one as possession, e.g., John's hat, proves exceedingly complex when we consider all the necessary conditions which must be satisfied in any definite context before the judgment employing the concept is made. We shall therefore postpone its consideration until we deal with situation concepts. "To" in the sense of motion towards, is a similar case, demanding a complete context involving motion, gradual diminution of distance between two objects, etc. These, and concepts such as continuity, contiguity, etc., though obviously predominantly relational, have a greater reference to situation. The distinction is this: whereas some concepts refer to a simple relation to be found within a situation, others refer to a whole situation which a relation knits together in the sense that its maintenance provides the unity of the situation. Identity, difference, and the simple spatial and temporal relations are of the former kind; continuity, contiguity, order, etc., are of the latter. It may be that the difference is not of kind, but of aspect or degree of predominance. At bottom, it is analogous to, if not identical with, the difference between single simple and single complex situations.

### (3) *Material Concepts*

These are more capable of analysis. Under them we comprehend the various materials we see in the world about us—wood, bronze, air, water, etc. They include the elements and compounds and some of the more important mixtures. For the most part they are known to us in ordinary life as assemblages, aggregates, or perhaps unities of several sensible qualities. It is therefore a kind of structural analysis (though it may seem a weak one and only a kind by analogy), which is exercised in examining the various instances, and picking out the qualities whose presence is indispensable to the employment of the concept under consideration. It is largely analysis in this field which has led at times in the history of philosophy to the view of the concept as static. What is gold, but a certain color, degree of hardness or softness, etc.? The more, however, that chemistry treats as the marks of a material its potentialities for different types of reaction in addition to those potentialities for various types of perceptive situations, the more structural analysis appears in its own nature to be concerned with concepts of this kind.

[2] For maintenance of a relation or continuing to be, as an activity or actuality, see part I, page 31, note, where it is stated that in the logic of situations, motion and rest are equally activities or actualizations.

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### (4) *Thing, Object, or Subject Concepts*

Here the work of analysis proper is at once apparent. Things differ from the materials of which they are composed in being more determinate. But what is the nature of this determination. A chair is, for example, wood determined in a certain way; so is a tree. This determination in the chair must be more than a certain shape; in the tree more than a few additional qualities. In the former it is the reference to the situation into which it is capable of entering, a situation in which a human body of definite material and shape occupies a definite spatial position in relation to the shaped material of the chair. The tree is more than wood formed so and so; it implies capacity for growth and absorption of food. The determinations by which things or objects or subjects differ from materials is their reference to a more determinate kind of activity of which their peculiar formation is the ground. All this is discovered by structural analysis. It asks in what situations we employ the concepts of chair, tree, etc., and finds in examining these contexts of existents that the concept has its meaning only by reference to them and the activities they involve. As isolated things, chair, tree, etc., are such only by containing the potentialities of participation in situations.

### (5) *Action Concepts*

These, structural analysis readily discovers for us, are the complements of thing or object or subject concepts, even less independent of their contexts for the possession of meaning than their subjects. We discover that every instance of an action involves reference to a subject, and to that on which or by means of which the action takes place. In conceptualizing actions (or the passive, e.g., freezing) we abstract from activity situations which are, however, not forgotten so long as the concept remains clear. If it becomes obscure, it is by the analysis again that we clarify it, discovering a full meaning from an examination of contexts of existents. And when it is clarified, the action gives way to a situation in which the distinction of "action" and "passion" is replaced by one of chief ground and subsidiary grounds of a single activity.

### (6) *Situation and Synoptic Concepts*

We have seen that both action and thing concepts are incomplete situation concepts which structural analysis can complete. They are not, however, a vicious abstraction which must be eliminated; for, as we saw in the analysis of potentiality, things do exist outside any kind of situation as shaped or formed materials capable of entering it, and can therefore be thought of as such. On the

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other hand, there are concepts referring to whole situations from which portions may not be intelligibly abstracted. These as they summarize situations and give their structure as it is thought, may be called *synoptic* concepts. Synoptic concepts are, therefore, a particular type of situation concepts. The latter term is applicable to all situations including those from which things or subjects derive their nature; the former refers only to complex situations, understanding of which is marred by abstraction of elements of structure. Thus, although things or subjects participate in situations referred to by synoptic concepts, they do not for the most part derive their nature from (i.e., they are not what they are as a result of possible participation in) these situations. Again it is quite possible that this is only a difference of degree, not of kind. Now the wider and more complex the situation, the more need there is of pruning away the irrelevant matter, and the greater the demand for an examination of contexts to find what is common to them all. Here then, in the synoptic concept, is the most proper home of structural analysis.

We gave above the example of "John's hat." Possession seems to be a simple, almost unique relation. Below the surface, however, lies a complex conceptual network. "John's hat" presupposes the whole institution of property, and an analytic examination will show that the context of its employment is nothing less than a social system of mutual guarantees, reciprocal duties and obligations, apart from which the possessive case in the full sense is unintelligible. One is reminded of Hume's thorough analysis of the manner in which the idea of property grows up by association. What he gives is really an account of the kind of situation in which the concept is employed. If we carry it much further, as it seems capable of being carried, we get by expansion, the full meaning of John's hat to be, "John is one member of a social community in which it is recognized that whatever is used by one of its members in the exercise of a capacity which can be included among other capacities without its exercise being contrary to their exercise, will not be interfered with by any other member of the community. This hat plays its part in the exercise of such a capacity on John's part, being acquired by the due exercise of another such capacity."

This is a very rough description of the structure of the situation in which the concept of property is employed; certainly it seems clear that the more we think of it, the more we will be unable to attach any other meaning to possession in the sense of property than the agreement on the part of others to refrain from the use of the article in question in return for certain similar obligations recognized by the so-called proprietor. It is well to point out (lest our account seem naïvely complex) that we have spoken of possession

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in the sense of property. But even in its simpler sense it is a synoptic concept. John's hat may mean merely, "The hat frequently contiguous to John's head." Again the possessive sums up a situation involving several factors, knit together by the maintenance of the dominant relation of contiguity.

Another typical example is Aristotle's favorite instance of an eclipse. By an eclipse (e.g., of the sun) we mean a situation including a certain relative position of the earth, sun, and moon such that something happens, viz., darkness (complete or partial) on a portion of the earth. The concept is used to mean *nothing less than the whole situation,* the cutting off of the light from the sun to the earth by the interposition of the moon. It is therefore an excellent example of a synoptic concept, and its clarification is a convincing instance of the truth that structural analysis discovers meanings by the examination of existents and that the meaning or conceptual structure equals the structure of the situations.

It is well to consider at this point the possible objection that too much is being claimed for structural analysis: "If the process of clarification of the concept of an eclipse is an instance of structural analysis, then the empirical investigations of astronomy are analytic in this sense, which is absurd. This type of clarification is limited to situations which we ourselves create in the sense of imposing a unity upon them. This is true of judgments of moral and esthetic values, and those of obligation, property, etc., in social life; but the situation referred to by the term 'eclipse' has an independent existence as a unified situation."

This position is utterly mistaken; for it elevates differences of predominating aspects into differences of kind. Eclipse, beauty, goodness, obligation, property, are all synoptic concepts; they all describe situations which are real relations of real existents, and whose structure consists of invariant relations of types of existents. They only differ in that in some of these situations men, their natures and volitions, play a distinct part; in others they do not. Therefore in the one case the aspect of our meaning is thought to predominate, in the other the aspect of existence. But the structure, and so the conceptualization, is no more arbitrary in the one case than in the other. It is no less arbitrary to select for thought the one relative position of the sun, earth, and moon, out of all the rest, than to select the one relation (in the case of property) of user to used out of the possible relations of used to all other men. In both cases alike the situation is one because there is some one happening. In the eclipse it is the alteration of sense due to the absence of light; in the other case it is the difference the particular relation makes in practice. There are (so to speak) an infinite number of possible structures of

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situations (i.e., of possible types of situations) but they secure the necessary unity only when they have one activity or result; they thus become thinkable, but we actually do think about them or pay any attention to them or assign them a name, when they interest us.

In these ways all synoptic concepts are alike. And if they are alike, then in every case the process of their clarification may be called structural analysis. In the eclipse the first fact noticed is the obscuring of the light of the sun at a time when it would not be expected. This, which the eye notices is, if you like, an astronomical datum. But in saying to himself, "Here we have no self-dependent manifestation, but part of a relatively closed situation of a type in which further examination will discover a structure," the observer is becoming analytical. In examining the situation, in calculating the size of the earth, moon, and sun, and the laws of their relative motion, in discovering the laws of the occurrence of eclipses and in predicting them, he is practising astronomy, making observations, using his reason in ordering them according to invariant relations, and employing demonstration to deduce results. But strictly in so far as he is clarifying the situation in which the concept is applicable, in so far as he is discovering the structure which is common to the various situations, he is practising structural analysis. This can be said here to usurp all the labors of thinking only if we do away with structure completely by insisting that *all* judgments about a thing not merely imply but actually state elements of its structure. This happens most frequently on the view which identifies the meaning of a proposition with its consequences, e.g., the meaning of the proposition "the earth is round" is that if you go travelling in the same direction you will return to the same spot. But obviously the situation in which this journey is made is only one of many possible situations in which the earth in virtue of its roundness participates. All these situations have something in common and that is the structure they exemplify. This structure is the meaning of the proposition, not any one of the situations in its totality. For on the latter view one might claim that the meaning of a proposition, "$X$ is round," would be "If you follow the edge of $X$ long enough you will become dizzy." Absurd as this is for the meaning, it is readily corrected as we have shown. For the roundness of $X$ is the ground of the activity of "becoming dizzy," the remainder of the ground lying in man, the other participant, i.e., the special formation within him which is responsible for the reaction. The proposed meaning of the proposition, "$X$ is round" is therefore merely one of the situations manifesting the structure. Hence to identify the meaning of the proposition stating the ground in the subject with any situation in which the subject participates in virtue of that

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ground, is a fallacious identification of a meaning with one of its consequences, or the potential with one of its possible actualizations.[3] It is tantamount to a denial of structure. If this is an invalid procedure, structural analysis is quite different from other types of thinking, though it may be one strain in a complex mental process of discovery, or often its works must be accomplished and clear meanings established in order that the other kinds of thinking may follow. For example, in the case of possession, to deduce that this is John's hat (if it be a doubtful instance) presupposes a knowledge of the meaning of property, established from acknowledged instances of it. That deduction is not an instance of structural analysis, nor is any such legal procedure, except in so far as a new case sets a precedent revising the general law or making it clearer; certainly not if it be merely subsumed under it.

It follows, therefore, that the objection we set out to consider rested upon an irrelevant conclusion. From a false view of meanings, thinking them to be in some sense only "mental" and from an association of clarification with meanings, it passed to the conclusion that clarification is concerned only with the mental, and therefore chiefly with morals, esthetics, and the like, which have as a great part of their subject-matter, volitions, thought, feelings, and likings, and therefore present outwardly the appearance of being a search more into ourselves than into things.

It is nevertheless true that a great part of the field of clarification or structural analysis is contained in moral and esthetic philosophy, and perhaps still more in metaphysics. This is because we find there many synoptic concepts whose structure is highly general and abstract, comprehending a great variety of situations, so that it is no easy matter to recognize the structure. If among these is thought to be the home of clarification proper, it is only because particular kinds of situations, being less extensive and less abstract, offer less resistance to its process. It is obvious now that our procedure in the previous two parts and in the present discussion has been itself one of structural analysis. We asked at the very outset what was common to the various instances in which we speak of there being a single situation, and we outlined the structure we discovered. Similarly we sought the structure in the various contexts in which infinity, potentiality, nature, and even structure, were predicated. That structure is the meaning of the concept, not a mere condition of it; for though the synoptic concept may often present the ap-

[3] This fallacy may be considered the counterpart of what Professor Moore calls the Naturalistic Fallacy, and might, to keep the parallel, be called the Post-Naturalistic Fallacy. If the one identifies something with its conditions, the other identifies it with its consequences.

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parent simplicity of the quality concept, it is due to its high degree of unity, not to atomic simplicity.

The philosophy of the determinate has now become self-conscious regarding its method, and its method has been discovered as implied in its general position. Its analysis of types of concepts, though not completely exhaustive, has given some support to the original contention that thinking implies the situation, and that the latter does not imply anything different in character, such as an infinite. Nor should the fact that the method itself springs from the philosophy serve to render its results hypothetical. For only two tests may be applied. One is the cogency of its reasoning; the other is the success with which the method solves particular problems in metaphysics, ethics, and kindred fields. If on the assumption that good, right, obligation are synoptic concepts, capable of structural analysis, it can to some extent clarify ethics and reveal a systematic ground for moral judgments; if similarly it can give an account of esthetic concepts, epistemological concepts, and those of many other fields, so as to render their sciences more systematic, it would have some reason to claim effectiveness. If in addition it prove to be the method which, employed in metaphysics, builds up a partial system from which it can itself be deduced as a method, then so far from its behavior being considered circular as proof, it must be acknowledged to have justified its position as the most trustworthy instrument of metaphysical speculation.

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## REPORT OF THE THIRTY-FIRST ANNUAL MEETING OF THE EASTERN DIVISION OF THE AMERICAN PHILOSOPHICAL ASSOCIATION

THERE was something dramatic in the close of the New Haven meeting, for, at the end of sessions sprinkled prodigally with problems of symbolism sprung directly or indirectly from *Principia Mathematica,* an author of that provocative work, in his address as retiring president of the Association, presented and skilfully defended a thesis. The thesis is one not foreign to the pages of *Process and Reality,* but many of Mr. Whitehead's listeners heard in his graceful epigrams echoes of an essay published more than two decades ago and of late not often recalled, an essay written in 1908 by F. H. Bradley and published in *Mind* of January, 1909.

The subject-object relation has traditionally been limited to the knower-known relation, Mr. Whitehead noted at the opening of his address, and he proceeded directly to his thesis with, "I challenge

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that limitation." In support of his challenge he emphasized the primacy of feeling and the verifiability of non-sensuous perception. To limit perception to excitation of sense organs is, he pointed out, a conventional but dangerous employment of the term. There is a wider meaning, but one which has been for the most part overlooked in the emphasis placed by its proponents on the sensationist definition. Things may be termed objects for an occasion of experience, but the occasion does not arise out of the mere passivity of the subject. There must be activity, and this activity is the creative element of the occasion. "Concernedness" is of the essence of perception. Even Hume clothed each perception in liveliness. A mere patch is silent as to the past and future: sensa provide (if they are considered starkly present and immediate) no material to experience. Sensationalism has provided a literature easy to read, facile with explanations, beguilingly convincing, and wholly fallacious. For no clear-cut perception can ever be limited to the here and now. Our immediate past is not *mediately* connected with the immediate present, but is continuous with the present[1] and "the immediate past surviving to be lived through in the present is the prime instance of non-sensuous perception." Thus the absolute individuality of each occasion of experience must be qualified by the continuity of experience in which feeling enjoyed in the past is present as felt datum. Personal identity, which receives all occasions of a man's life "is an inescapable fact in every doctrine in the history of western thought." Events are together by reason of their unity of locus. This gives at once a basis for the doctrine of the unity of nature and experience centering about the notion of "the imminence of the past energizing in the present."

The above analysis must be, of course, the crudest brief of Mr. Whitehead's lucent address, but if it succeeds in indicating that the "philosophy of science" (which in too many hands is neither philosophic nor scientific), no matter how intricate and absorbing that may become, is not by itself adequate to the exigencies of rational thought, then the warning with which the address was instinct will have been conveyed.

The opening session was devoted to Hegelianism in observance of the centennial of Hegel's death. The three papers read were far from perfunctory tributes, but for some reason the audience failed to take fire. This may have been due to the fact that the conference was just getting started, but the discussion, or rather the poverty of it, seemed to reveal that Hegel weighed none too heavily on the minds of those present. Mr. Hook's paper on the "Contemporary

[1] "Past" and "present" are here used in a sense similar to the one made significant by C. S. Peirce in 1892.

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Significance of Hegelian Philosophy'' drew a broad distinction between Hegel's idealism, absolutism, and concept of organic totality, on the one hand, and his objectivism, his theory of process and dialectic, and his conception of objective mind on the other. Mr. Hook contended that the latter features of Hegel's thought could be disengaged from the former and after such liberation remain meaningful and productive today. Mr. Cohen, while likewise ready to recognize positive contributions of Hegel, inclined more to negative criticisms. He warned against the danger of hypostatizing categories: ''They are not things which combine, but relations''; and he suggested pertinently that any method which proves as many debatable points as does that of Hegel is rightly held suspect. It is impossible to deduce existence from abstractions, for there will always be an element of contingency, *hylê*, chance; and in the face of this abstractions collapse. Mr. Sabine's paper dealt with the origin of Hegel's political philosophy in relation to German conditions in the early nineteenth century and showed that Hegel, instead of justifying the *status quo* at that time, offered a solution for ''constitutionless'' Germany distinctively adapted to German exigencies. In the discussion that followed it was both affirmed and denied that contemporary Germany was again turning to Hegelian thought for relief in political crisis, and the further question whether indeed Hegelianism is a philosophy of purely provincial significance or not was also discussed on both sides, without however a notable clarification of the matter being reached.

Discussion came to life in the Monday afternoon session at which three papers on logic were read, and continued to be keenest in those subsequent meetings where logical problems were treated. Hence these discussions are reported rather more fully than the others. The papers read at the logic session on Monday afternoon were: ''The Viciousness of the Subject-Predicate Relation'' by Miss Brown; ''Reflexive Relations'' by Mr. Parker; and '' The Philosophical Theory of Classes'' by Mr. Weiss. Miss Brown's contention was that the subject-predicate relation properly interpreted is not vicious. Every proposition involves an aspect of constancy and an aspect of variability with a principle of determination. The two outstanding systems of subject-predicate logic, Aristotle's and Leibniz's, can both be interpreted from this revised point of view. At the close of her paper it was objected, as Miss Brown had hinted earlier it would be objected, that a relation between subject and predicate again involves one in the germ stream of idealism. She answered by reiterating her thesis and pointing out that this need not be the case if one distinguish the two orders and determinables she had indicated.

Mr. Parker's approach to the question of reflexive relations was

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through the definitions of relation given by Johnson and in *Principia Mathematica,* as a class of ordered couples, or couples having a sense. In support of his main thesis he used Wittgenstein, Prop. 5.5321, though the ensuing discussion indicated that he might better have stressed one of its premises, i.e., 5.5301,[2] in order to avoid an almost inevitable misunderstanding. Identity, Mr. Parker urged, is an irreducible triadic relation holding (1) between two expressions and a meaning, (2) between an object and two descriptions, (3) between two appearances and the thing of which they are appearances; and in every expression of identity the expression can be so altered as to eliminate "identity." When we have $x$ with itself, we really have no couple at all, and so no relation, for $f\ (x, y)$ is nothing more than the formula for simple predication if $y$ is taken as identical with $x$. All relations commonly called reflexive, such as "knows," "loves," "contradicts," etc., are triadic. Personal identity is a one-many relation between self and many events at many times. Mr. Whitehead objected that the limitation imposed on $f\ (x, y)$ would rule out much powerful reasoning for the mathematician, and presented an illustration of reflexive relation in the case of a president ruling as president over the class of share-holders of which he is a member. Mr. Parker responded that he had merely amplified the definition of relation in *Principia Mathematica,* and objected that the illustration was not strictly apposite. Mr. Weiss pointed out that we must apparently reject all symmetrical transitive relations of the form *aRb, bRa, aRa,* to which Mr. Parker responded that he would not allow the inference, *aRa.* Mr. Bayliss objected that in "Blue is *blau*" (an illustration used in the paper) the relation is not triadic in that it holds between the meaning of the terms and not between the terms themselves. This objection is answered, however, in the proposition in Wittgenstein above. Mr. Cohen asked pertinently if to analyse anything is to "eliminate" it, suggesting that this is a "very unphilosophical prejudice," his question, however, being misunderstood by the speaker, who reiterated that the elimination of "identical" and "different" is a step toward an adequate language unburdened with redundancies.

Mr. Weiss in his paper pointed out that the definition of class developed by Whitehead and Russell is inadequate in several ways, most notable of which are that the notion of class is used in the definition of class and that it is bound up with a theory of description which involves the distinguishing of five different kinds of identical propositions where there should be only one. He suggested that a more fruitful procedure would be to analyze the proposition into two functions, $\phi\check{x}$ and $\phi!x$, discarding the unwarrantable metaphys-

[2] "That identity is not a relation between objects," etc.

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ical assumption that "this book" refers to an existential object and that "red" is an abstraction for the recognition that both are abstractions, importing a new primitive, "abstraction," and thus clearing up the perplexities of proposition-and-propositional function which swarm through *Principia Mathematica*. In the proposition, "Columbus is the discoverer of America," "Columbus" is not an individual separated from properties, nor a class (save so far as indicated by some characteristics), nor a member of a class. "Columbus" is a unit, the locus of abstractions. The position involved here, he noted, is nearer "objective idealism"[3] than to the atomism of contemporary logic. Mr. Ushenko objected that Russell, too, would say "this book" is really a propositional function, but it was answered that Russell once certainly held the view imputed to him.

Mr. Whitehead pointed out that the doctrine of functions has still to be explored widely, but questioned some of the critical points of the paper. Mr. Weiss parried with the remark that the real problems of logic are contained in the introductions to *Principia* and not in "the dexterity of its authors." In *Principles of Mathematics* Russell spoke of abstractions, but later he came to consider $\phi x$ as demanding the discovery of a value for $x$ which involves existence. The speaker added that "atomism crops out in a very bad form in Wittgenstein" in the notion of propositions as "having hooks to link up particulars." Mr. Cohen pointed out that if the speaker's contentions were sound then empiricism is unsound, in which Mr. Weiss concurred "if by empiricism be understood atomism." He concluded by asserting that while idealists have known too little logic, modern logicians often fail to recognize the importance of the concrete. Just before the session adjourned there occurred a rapid-fire colloquy between the speaker and Miss Stebbing of London University over the status of "existential entities" in which the atomism he had been attacking came defiantly to bay.

In the Monday afternoon session on Value, Mr. Kruse in his paper on "The Hedonistic Interpretation of Pessimism" made clear the inadequacy of any reply to pessimism which interprets that position in terms of pleasure-pain. Any refutation of pessimism, he concluded, must take into account the *summum bonum* sponsored by the particular pessimism dealt with, and not be concerned with merely advocating a "balance of pleasure." Mr. Roback's paper on "Significance" was an attempt, it might be said, to make "significance" significant, to detect what there is in the sempiternal problems of critical thought which makes each age's emphases meaningful to that age despite the fact that to a later culture those emphases may appear wide of any philosophic mark. The objective significance of

[3] i.e., that of Peirce.

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problems derives from the objectivity of the situation, Mr. Roback pointed out, though this gives but a qualified objectivity. His conclusion was that there is a gradual unfolding in cultural progress of some fundamental significance which "clear-minded intellectuals, not necessarily technical philosophers, can intuitively perceive." Mr. Dubs' treatment of "A Desire Theory of Value" was based on a theory of desire which finds it to be "a certain type of common neural organization" possessed of "(1) a goal, (2) conative energy, and (3) the capacity to produce a pleasant or unpleasant feeling." An interpretation of goods, economic, esthetic, moral, together with an evaluation of "contentment" and "true happiness" was then erected on this basis. Mr. Urban's paper, which closed the session, was concerned with the necessity for a redefinition of mind and the function which a properly oriented theory of value might serve in that redefinition. The speaker stressed the doctrine of ascending levels of mind, beginning with subjective mind and culminating in social or objective mind. Objective mind may be unified, he pointed out, by introducing a theory of value which will import individuality, much, it was suggested, as Bosanquet has done. Psychologically, it was asserted, we must start from wholes-having-meaning, e.g., only in the light of social, objective mind does subjective mind, person, become significant.

In the evening Mr. Murphy, discussing objective relativism, restated his position with great clarity and took occasion to score some of its critics. Against Lovejoy's championing of "scientific objects" he pointed out that such "objects" are abstractions which can be true of reality only in a limited aspect, and to absolutists of all kinds he said neatly that "the absolutist must talk about something . . . and is compelled to bootleg relativism." No one can talk *adequately* of reality, for the object known must always be a partial aspect. The speaker argued that knowledge of data does not require all the machinery of dualism, for all "appearances" are but objects of one kind or another. He ended with a quotation from his first presentation of objective relativism, reaffirming his faith in the position outlined there. Mr. Hook asked eagerly for a section of the paper dealing with pragmatic critics which had been omitted in the twenty-minute reading, but was denied the pleasure of a counter refutation. Mr. Cohen emphasized the objectivity of secondary qualities which the paper had affirmed, and pointed out how the modern interpretation of probability is consonant with such a view inasmuch as probability is no longer regarded from the standpoint of subjective ignorance. Mr. Morgan asked whether an event had a core, and if so whether this is knowable, to which Mr. Murphy responded with commendable brevity, "No." Mr. Montague raised

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the question of the location of secondary qualities, suggesting that if these were located in the head then much fruitless quibbling over "subjective" and "objective" would be done away with, and that furthermore epistemology could then proceed experimentally as do the physical sciences. Mr. Macintosh made a point with regard to organism-environment considerations, to which it was answered that objective relativism is concerned with "aspects," not with organism-environment, save as an "aspect."[4]

Mr. Ushenko followed with a paper on "Fact and Event," presenting events as "organic units of change" which can not be instantaneous, and referred to an article by G. E. Moore in the *Proceedings of the Aristotelian Society*[5] for its presuppositions. Events are indicated by names while facts are expressed in propositions, though facts differ from propositions in that they, unlike propositions, have no element of generality. Events blend in single blocs to be perceivable. To record an event named *A* two facts must be noted, (1) *A* is in space-time; (2) *A* is a so-and-so. Substituting (2) in (1) there is a permanent record that a certain specification of space-time applied to a so-and-so.

Miss Stebbing's analysis of "Substances, Events, and Facts" was one of the most provocative of the whole meeting. "Substance," she pointed out, was used in the paper so as to be replaceable everywhere by "thing." "Substances are artifacts about events." Russell and Broad fail to make clear how a *string* of events and a *complex* of events respectively differ from a collection of events; this oversight is regrettable in both cases. Quoting from Wittgenstein she presented as her thesis that "the world divides into facts," and that philosophy must be concerned with an analysis of facts. Her argument rested on two assumptions: (1) Some propositions can be known to be true. (2) Analysis has a direction, so one can talk about reaching basic facts at the *terminus ad quem* of analysis. Things, facts, and events differ *typically* from each other (a most important point to grasp in understanding all her work). A complete description of the world, if possible, would be of facts. Miss Stebbing expressed some doubt that facts can be defined, but assured her audience that they can be indicated uniquely. In looking at the table, "I am now seeing an absolutely specific shade of brown" indicates an inexpressible. General facts and absolutely specific facts have in common that they are facts, i.e., configurations of

[4] It might be noted parenthetically that this one beguiling phrase causes more trouble in philosophic discussion than any other. Critics who would not think of adopting, as metaphysical catch-words, concepts of astro-physics or electro-dynamics seem to find in the specialised concepts of biology unquestionable data for philosophy to build upon.

[5] N. S., vol. XX, pp. 40–62.

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elements (which may be facts). That which enters into a configuration (elements) involves causal relation or entailment. Absolutely specific facts are the end of philosophic analysis and elements of basic facts are ultimate constituents of the world. "The number of basic facts is exactly what is accidental in the world." An event can not be characterised as "brown," but a thing can; an event can not be the object of activity, but a thing can. A group or string of events (it would be nonsense to say "sense-data") can not be brown nor occupy a time nor provide one with a support, and Broad and Russell never get around this difficulty. There followed a criticism of Russell's view of "aspects" and "logical constructs" in which Miss Stebbing pointed out that the latter can not be "neutral" nor be referred to by "it." Russell, though he himself introduced the phrase, does not understand what "logical constructs" are, for as he uses the words they refer neither to what is logical nor constructed. "This table" refers to a set of facts, but no one of them has a unique aspect which can be referred to as "the table"; "this table" rather refers to them all at once. At the conclusion of the paper Mr. Weiss returned to the fracas interrupted that afternoon, objecting that facts, and not things, are derivative. In answer Miss Stebbing referred to her two assumptions. *Mr. Weiss:* "But why should we believe there *are* basic facts?" *Miss Stebbing:* "We just now agreed to." *Mr. Weiss:* "But facts are about things." *Miss Stebbing:* "Oh, then you believe the world divides into *things?*"

In the history session Tuesday morning Mr. McClure presented a paper dealing with "Circularity in Greek Philosophy," in which he adduced the systems of Anaximander, Empedokles, the Pythagoreans, Plato, and Aristotle as evidence of the predominant importance the notions of the circle and cyclical being had for the Greek mind which had not grasped the principles of transfinite mathematics and the doctrine of the continuum. The circle represents perfect movement to Aristotle, and final cause was invoked to describe a kind of compensation which terrestrial bodies, deprived of perfect motion, possess. The concept of perfection, symbolized by the circle, is indicated in Greek art and political theory, Mr. McClure pointed out. Mr. Swabey objected that the concept of circularity is but a special case of the "imaginableness" of the world to the Greek, and it was objected that rectilinear motion is also an important concept in Greek metaphysic, to which Mr. McClure answered that he had no intention of making circularity the key to all Greek philosophy. Mr. Edel asked how one could hold that Aristotle's celestial physics was a "direct deduction from the idea of circularity," and suggested that the idea of the circle was derivative from that of "the whole." Mr. McClure responded that he did not wish

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to minimize the observational aspect of Aristotle's physics, but merely intended to show how there was present, as in all empirical science, a great deal of *a priori* matter, and that the idea of the circle was symbolic of perfection, "the whole," etc. Mr. Calhoun in his paper, "A Neglected Main Source of Plato's Thought," attempted to establish a genetic relation between the Dialogues and Anaxagoras's writings. He emphasized particularly the importance both to Plato and to Anaxagoras of the principle of "great-and-small," and also the doctrine of "participation" stressed by both thinkers. It was objected that the opposition of great and small was rather a common Greek instrument than unique to the two philosophers, and Mr. Porteous suggested that "participation" could hardly be used univocally with respect both to Plato's doctrine and that of Anaxagoras, the former having to do with universals and the latter with material constitution. Mr. Birch's paper on "The Psychology and Metaphysic of Ockham," stressed the contrast between the doctrine of science espoused by Aristotle and the nominalism of the fourteenth-century thinker, pointing out that "he interpreted universals in terms of particulars; Aristotle particulars in terms of universals." Mr. Alles's paper on the possible comparison between Clarke's doctrine of evolution as specialization within *phyla,* and Leibniz's metaphysic of the monad, was an interesting attempt to develop a synthesis of these two positions.

In opening the Tuesday morning session on Logic Mr. White's paper on "Meaning" elaborated three essential points: (i) the "bystander" theory of meaning is inadequate; (ii) meaning is primarily mediate; (iii) meaning in at least one sense is distinguishable from value. Mr. Blumberg's paper on "Demonstration and Inference in Philosophy" provoked one of the most spirited and productive passages of the whole meeting. He began by confining logic to "formal pseudo-propositions" which are tautological and do not limit the possible states of affairs, and which are described as true regardless of the possible state which is in fact the case. A *proposition* is true or false according as it states what is the case and can be verified. Empirical verification differs from inference in that inference must be tautological, though the term, inference, is often used in another sense in empirical science; this latter solecism tends to confuse general implicative propositions with definitions and rules of syntax. The assertions of mathematics are *a priori* precisely because they are analytical, while the assertions of the sciences (including ethic) are synthetic *a posteriori.* In philosophy verification is impossible, for philosophy is the attempt to come to clarity with respect to such terms as "meaning," "truth," *et al.* Philosophy does not consist of propositions, but of "elucidations" which are not true or false but

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"efficacious" or "inefficacious." "To the extent to which our language becomes logically sound and our empirical sciences factually complete, philosophy in the technical sense becomes superfluous." (It is unfortunate that the session was deprived of Mr. Boas' paper on "Meaning," which, I understand, would have furnished an approach to the problems that Mr. Blumberg discussed.) At the close of the paper Mr. Drake asked if all propositions about the soul are meaningless because they are unverifiable, and, if it is illegitimate to *hold* them true, may they not be *believed* to be true. Mr. Ginsburg observed that the apparent disagreement with Kant was really a shifting of Kant's whole problem so as to make the "applicability" of mathematics to the world impossible. Mr. Weiss pointed out that even in extensional logic there must be some intensional entailment, and asked whether the speaker would distinguish between propositions which are known to be verifiable and those which are not yet known to be verifiable. If the latter are meaningful, then meaninglessness does not consist in the fact that an assertion is nonsensical, but that it is a function. Mr. Irving asked whether verification is used univocally with respect to the physical sciences and the social sciences, and, if this is the case, what meaninglessness then means. Mr. Warbeke objected that the limitation of meaning to physically verifiable propositions seems to leave out everything we are most interested in, and took issue with Mr. Blumberg's witticism that "metaphysics is bad grammar." In answer to his objectors Mr. Blumberg pointed out that meaninglessness may be used in two senses: (*a*) when in the proposition there occurs a term not yet defined but not indefinable; (*b*) in the proposition there occurs a violation of logical syntax. He asserted a *typical* difference between the physical sciences and the social sciences as Mr. Irving had suggested them, and hinted that there must be laid down rules which permit of translation. To Mr. Weiss he replied that tautological intension was the only type considered in the paper, denying intension in the case of relation between two propositions which do not involve each other tautologically.

Mrs. Swabey's paper on "Logical Force in Demonstration" deplored the trend toward lexicography on the part of symbolic logicians and toward mechanism on the part of experimentalists. In each case, she suggested, there seems to be a denial of logical necessity, and asked, "How can a system be a logical system if devoid of apodeictic force?" Her conclusion was that logical principles possess a certain inevitableness, since not only is their validity presupposed in all the structures of knowledge, but they serve as tests of the formal truth of all other systems without being themselves subject to any extraneous principles. To her paper it was objected

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by Mr. Hook that only confusion could result from lumping together all types of empiricism, and that she had not met the question relevant to all such analysis, "What is the test of consistency?" Her answer was that empiricism does in general say that the real is the concrete particular and that this has materialistic and mechanistic implications. To his question of the place of procedure she replied that procedure must be included in the analysis of logic, but the procedure is always logically objective.

In the afternoon one session was devoted to probability in scientific method. Mr. Nagel contrasted the frequency theory of probability with "subjective" and "materialistic" theories. The real problem is to develop a theory of probability which will enable one to distinguish between "One theory is more probable than another" and "The probability of a coin falling head is equal to the probability of its falling tail." Quoting "there is no probability in advance of the real conditions," he proceeded to discuss a view of probability founded on evidence and not on subjective limitation. The ground for the assertion of one inference rather than another is supplied by a leading principle established on evidence. Probability of the first order is given, e.g., by a *series of sets* of ten throws of the coin, probability of the second order by a *series* of series of sets, and so on. This makes meaningful the *probable* statement of probability. A true theory of probability must be founded on "traits of existence, not subjective limitation. . . . Contingency is as little an anthropomorphic character as is strict determinism." Mr. Demos asked whether the failure of a premised probability to work out at any point could affect the probability of succeeding throws. Mr. Weiss inquired whether the definition of randomness used by the speaker was nominal or experimental, and reinforced Mr. Demos' query by asking how it is determined whether a series is convergent or not convergent; he also asked whether the theory itself was probable. Mr. Dotterer raised the question of partial ignorance as basis for probability, and Mr. Ushenko asked about the place of intuition. Mr. Eaton defended Keynes' position, pointing out that for Keynes no probable judgment can be altered by further experience. The probable is relative to evidence and no matter how much additional evidence may be gathered this will not affect the original probability. He objected to the speaker's assertion that error was impossible on Keynes' view. To this Mr. Cohen took issue, suggesting that Mr. Nagel had much in common with Keynes and pointing out how great an advance the basing of probability on evidence represents. In the course of his remarks he succeeded in answering most of the other objections, suggesting that the relative frequency theory is a theory of probable inference, dealing with *types* of inference. Mr. Nagel

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answered Mr. Weiss's questions by asserting that the theory is but probable itself, that the determination of a limit depends in each case on the nature of the physical system involved, and that randomness and limit are concepts entertained hypothetically for any given physical knowledge. To Mr. Demos he replied by correcting a misapprehension: the question is never one of a set of throws, but of a *series* of sets.

Mr. Ginsburg succeeded engagingly in his paper on "Probability, Determinism, and Science" in invoking the shades of an earlier tradition for his method. Probability must rest on a mixture of both *a priori* and experimental grounds, and, in flat contradiction to the preceding speaker, he asserted that "the method of probability is not itself probable any more than life insurance is a risky business." Furthermore probability must posit order and not chaos, although no scientific system can be adequated with reality nor can reality be identified with causal determinism. The whole analysis was somewhat confused by the introduction of a phrase which even that arch-idealist, Bradley, discarded toward the end of his work—"ultimate reality." Mr. Hook objected that certain metaphysical conditions were surreptitiously imported into the speaker's argument which did not follow from his premises, and noted that apparently the question under treatment was merely the Kantian problem of knowledge. What, he asked, is the order of probability an order *of?* Mr. Roelofs asked whether if knowledge of the conditions of tossing the penny be successively increased it does not eventually pass into certainty, and whether this would also hold of quantum physics or whether "microscopic,"[6] i.e., subatomic phenomena are actually different and unpredictable in themselves. This same question was asked in a little different form by another member of the audience. Mr. Ginsburg's reply to Mr. Hook resolved itself into a skirmish over the word "reality," and when he responded to Mr. Roelofs that "you ignore rather than are ignorant of" certain conditions, it was suggested by Mr. Northrop, the chairman, that the argument was degenerating into teasing and that time was up. The argument of Mr. Margenau on "Probability and Causality in Quantum Physics" was too technical for most of us to follow, but the speaker gave as his objectives: "to state the basic postulates of quantum physics in probability terms" and to show that "the uncertainty principle appears from this point of view a very natural feature, not contradictory to ultimate lawfulness."

In the alternate session the same afternoon Mr. Brotherston discussed the significance of certain traits of primitive culture for an objective theory of mind. He argued that primitive ritual with its

[6] This curious locution cropped up many times during the discussions.

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superindividual elements shows that as soon as conation arrived at the stage of reflection, man's mind, while not forsaking special problem-solving, connected this with the wider problem of an inclusive conservation of values. Mr. Lafferty's paper on "Some Metaphysical Implications of the Pragmatic Theory of Knowledge" owed much, he said, to the late Professor Mead's concept of "perspective" as an essential factor in knowledge. This concept, he suggested, had metaphysical implications which many realist thinkers ignore in their insistence on an objective reality independent of any such qualification. Tests reveal things only as our manipulatory powers constitute them. Mr. Morgan's analysis of "Wilhelm Dilthey and the *Geisteswissenschaften*" was part of a study to be published in the *Philosophical Review*. The selected portion dealt with Dilthey's attempt to characterize a distinctive method for the *Geisteswissenschaften*, a method in which the "having" of experience (*Erleben*) and the ability to enter into others' experience (*Verstehen*) form the basis for conceptual generalization (*Begriffsbildung*). This method may be considered an alternative for the science of man and his culture in contrast to behaviorism on the one hand and introspective psychology on the other. The paper offered by Mr. Kerby-Miller on "The Theory of Truth," while objecting to the view that "truth is merely a means to satisfaction," recognized both discernment and interests as objective factors in the constitution of truth. Both the common structure of the world and our interest in organization underlie the judgments which we regard as true.

Unfortunately time was lacking for the discussion of these last papers. It would have been interesting to know how close Mr. Lafferty and Mr. Kerby-Miller felt their positions to be to the objective relativism outlined by Mr. Murphy, for there did seem to be some convergence of epistemological thought on a position of this kind in contrast to the more traditional unqualified realisms, idealisms, and pragmatisms. This, together with the keen and widespread interest displayed in logical analysis, were the outstanding features of the meetings.

The commodious appointments provided by the Yale committee for the meetings made it pleasurable and appropriate to pursue abstractions intensively without care for the world of carping affairs. The Executive Committee not only took excellent charge of this year's meeting, but had the foresight to advise members that papers submitted on future occasions be limited to approximately two thousand words so as to allow for more varied discussion.

At the business meeting of the Association, testimonial letters in

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memory of George H. Mead and William M. Salter were read and placed upon the record.

RUDOLF KAGEY.

WASHINGTON SQUARE COLLEGE,
NEW YORK UNIVERSITY.

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## BOOK REVIEWS

*The Zermatt Dialogues.* DOUGLAS FAWCETT. London: Macmillan & Co., Ltd. 1931. Pp. xxix + 541.

These dialogues are for the most part a restatement of an idealistic and mystical metaphysics which Mr. Fawcett has already expounded in his works *The World as Imagination* (1916) and *The Divine Imaginal* (1921). Instead of choosing as a world principle, *reason,* as did Hegel, or *will,* as did Schopenhauer, Mr. Fawcett selects from the remaining faculty concepts, *imagination.* Jacob Frohschammer presented a similar doctrine in his *Die Phantasie als Grundprincip des Welt-processes* (published in 1877), but did not give the term "Phantasie" the significance which it holds in imaginism. For Frohschammer, Phantasie is merely one of many Ultimates preexisting in God; whereas in Mr. Fawcett's first two books imagination is the all-embracing reality, a mystic, conserving and creating activity, aware of its activity, a radiant vision, capable of emotion and superior to God, who is described as only finite. In the book, *Divine Imaginal,* he suggests that the "grand sentient God" be called the "child" of this infinite divine imagining.

However, in this last book God's position has been raised. He is now identified with the Divine Imaginal—a benefit to God, perhaps; yet no particular alteration in the system described in the other works. As is stated in the Foreword, these dialogues involve no fundamental conflict with the original tenets of imaginism. They are simply a further development of the system. First of all, this development consists in attaching a few more attributes to the Divine Imaginal. Besides being all that it was, in the former books, it is in addition said to be perficient, but imperfect and incomplete, since it is still evolving; and evolve it will, he tells us, until the day when it quiets all disharmonies and brings discord to a final end. The next and last important point made concerning the nature of the Divine Imaginal is the distinction between its twofold self: namely, its consciring and its imaginism. The former is the "creative activity" and the latter the "conscrita, contents and creata posited by consciring." The main value of this discovery concerning the Divine Imaginal, which Mr. Fawcett made in his book *Divine*

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*Imaginal* and somewhat hazily endeavors to develop in these dialogues, is a classification into which the innumerable attributes of the Divine Imaginal may be fitted. For example, one could say that "All embracing Reality" was the Divine Imaginal in toto; the "infinite activity," the power of its consciring; the "Imaginals" (which take the place of universals), a part of its *imaginism* and Radiant Vision (provided one realizes that this "White hot Star" known as the Divine Imaginal, *conscires,* just as *radiantly* as it *imagines*). An arrangement such as this, Mr. Fawcett implies, but does not describe. Most of the chapter on "consciring" is devoted instead to a description of this activity in the various levels of being.

Mr. Fawcett is as optimistic as Schopenhauer is pessimistic. The first and last books contain an extended treatment of the problem of evil. In the first book ("The World as Imagination") he pictures a beneficent God doing his best, but quite often failing because of his extreme limitations: nor is the "Grand Imaginal" to blame; for evil is but the result of the descent of the Imaginal into *time succession,* thereby causing this mystic force to break up into unrest and strife. In the *Zermatt Dialogues,* the problem and explanation of evil is summed up in the following question and answer. "Why did the originally stable world-archetype fall apart into that welter of change, division and conflict which is the presupposition of Evil? . . ."— Answer: ". . . Because of the origin of the finite sentients themselves. . . . The evils to which the sentients are heirs are the price paid for their appearance on the field of (additive) creation." Yet despite this, Mr. Fawcett insists that man is not a helpless puppet in the hands of Fate; because every sentient is a "rill of the creative consciring itself. The Source actually passes into, suffers and rejoices as the rill." So far, one might well wonder how this doctrine could be conducive to an exuberant optimism such as Mr. Fawcett's. However, hope comes later. He tells us that the Divine Imaginal, with all its human "rills," is one day to pass into "the most Glorious Event imaginable." This event will be the end of all disharmonies and suffering.

In viewing the *Zermatt Dialogues* as a whole, I am inclined to feel that the development which follows the restatement of the general principles of the two former works hardly justifies the length of this book. Certainly, it is by no means as condensed, or as well constructed. This time, Mr. Fawcett is far more mystical both in his "conscrita" and descriptions. In fact, mysticism now has become an integral part of his philosophy. After attacking logic and scientific terminology, he praises the mystic, who "wants not only knowledge but all the other treasures of heaven as well." In one chapter, the author's spokesman indulges in an extra deep drink

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of this draught, and candidly exclaims: "I am a trifle 'God-intoxicated' perhaps like Spinoza, and I love the divine poetry that gave birth to the world process."

LIVINGSTON WELCH.

NEW YORK CITY.

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## JOURNALS AND NEW BOOKS

SCIENTIA. Vol. L., N. CCXXXVI–12. Die Naturwissenschaft dur Peripatetiker: *O. Regenbogen.* The Problem of the Variables Stars: *P. Doig.* La grande époque de l'anatomie comparative: *J. Chaine.* Etica e diritto nel mondo classico latino: *E. Albertario.*

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REVUE NEO-SCOLASTIQUE DE PHILOSOPHIE. XXXIII^e Année, No. 32. La méthode du realisme: *L. Noël.* La théorie du symbolisme moral de la beauté, d'après la "Critique du jugement": *C. Ranwez.* La connaissance intuitive chez Kant et chez Aristote (suite et fin): *A. de Ivanka.* Un recueil peu connu de questions sur les Sentences: *A. De Poorter.* La Constitution de S. S. Pie XI sur la réforme des études ecclésiastiques: *L. Noël.*

Gemellio, Agostino: Il mio Contributo alla Filosofia Neo-scolastica. Seconda Edizione, Riveduta ed ampliata. (Pubblicazioni della Università Cattolica del Sacro Cuore. Scienze Filosofiche, Vol. VIII.) Milano: Società Editrice "Vita e Pensiero." 1932. 102 pp.

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Hartmann, Nicolai: Ethics. Vol. I: Moral Phenomena. Authorized translation by Stanton Coit. Introduction by J. H. Muirhead. (Library of Philosophy.) New York: Macmillan Co. 343 pp. $3.50.

Symonds, Percival M.: Diagnosing Personality and Conduct. (Century Psychology Series.) New York: Century Co. 1932. xvi + 602 pp. $4.00.

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## NOTES AND NEWS

We regret to announce the sudden death on January 31, 1932, of Dr. E. C. Wilm, Lecturer in Psychology and Philosophy at Stanford University.

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We print below the program of the Philosophical Union of the University of California at Berkeley, California, for the spring of 1932. There will be a series of eight lectures on the general subject of "Causality."

January 22. The Elasticity of the Idea of Causality. *J. Loewenburg*
February 5. Causality and the Cosmos..... *H. C. Brown*
February 19. Physical Causality ..... *V. F. Lenzen*
March 4. Causality and Recent Science ..... *M. Schlick*
March 18. Causality and Effectuality .....*D. S. Mackay*
April 8. Causality as Continuity and Production... *W. R. Dennes*
April 15. Causality as a Category ..... *S. C. Pepper*
April 22. Causality and Validity ..... *G. P. Adams*

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**Volume XXVIII. No. 24. November 19, 1931.**

The Latent Idealism of a Materialist—A Review of Santayana's *Realm of Matter*. JOHN HERMAN RANDALL, JR.

Book Reviews. Journals and New Books. Notes and News.

**Volume XXVIII. No. 25. December 3, 1931.**

A Definition of Value. JOHN R. REID.

Book Reviews. Journals and New Books. Notes and News.

**Volume XXVIII. No. 26. December 17, 1931.**

Biological Relativity. OLIVER L. REISER.

On the Meaning of a Proposition. A. USHENKO.

Book Reviews. Journals and New Books. Notes and News. Index for Volume XXVIII.

**Volume XXIX. No. 1. January 7, 1932.**

Reason and Nature: The Metaphysics of Scientific Method. SIDNEY HOOK.

Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 2. January 21, 1932.**

A Study of a Philosophy of the Determinate. I. ABRAHAM EDEL.

Animism and Materialism in Whitehead's Organic Philosophy. ALBERT M. DUNHAM.

Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 3. February 4, 1932.**

A Study of a Philosophy of the Determinate. II. ABRAHAM EDEL.

Taking the Causal Theory of Perception Seriously. VIRGIL C. ALDRICH.

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# THE JOURNAL OF PHILOSOPHY

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# The Journal of Philosophy

## REPORT OF THE EIGHTH ANNUAL MEETING OF THE PACIFIC DIVISION OF THE AMERICAN PHILOSOPHICAL ASSOCIATION

THOSE philosophers who have regarded as grossly exaggerated the persistent reports of the demise of epistemology can take comfort from the eighth annual meeting of the Pacific Division of the American Philosophical Association, at Stanford University, on December 28 and 29. Mr. Boodin, to be sure, began the sessions with a bold and original cosmological construction, in the grand manner, but even Mr. Savery's presidential address, a large-minded and breath-taking speculation on cosmology, cosmogony, and the practice of the presence of God, was essentially and avowedly an ambitious application of the principles of the theory of knowledge and of logical methodology. At least one member, Mr. Hugh Miller, dared make an explicit defense of the priority of epistemology against the moribund vetoes of the realists, while less temeritous members contented themselves with more specific epistemological questions.

Perhaps because of this happy homogeneity of interests the meeting was unusually successful in calling forth fruitful and appropriate debate. Hardly anybody found hardly anybody else either uninteresting or unintelligible, and the interchange of argumentative amenities was genuine and rapid. If no one actually experienced conversion, surely nearly everyone was aroused and improved.

Mr. J. E. Boodin's "Matter, Space and God," the first discussion on the program, was not a mere occasional reflection. It was, as Mr. Lenzen reminded his hearers, a significant supplement to an imposing metaphysical system which has grown through a lifetime when other philosophers were confining themselves to logic and epistemology, a system which is the archetype of modern endeavors to construct a cosmology for contemporary science. It was the theme of the paper that in *space* we are to recognize, not a mere emptiness or a passive medium, but an active organizing power, the source or condition of all measure and structure, the ultimate creative force, a spiritual reality—in short, God. Leucippus discovered space, one kind of immaterial continuum; Anaxagoras discovered *Nous* or spirit, another kind of immaterial continuum. To suppose their identity



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we need only carry out metaphysically certain suggestions of Weyl and, lately, of Einstein, concerning the determining power of the spatial field upon the material configurations within it.

Mr. P. A. Schilpp's objection that so long as the scientists are undecided, it is rash for a mere philosopher to venture so far, was met by Mr. Lenzen's agreement with Mr. Boodin that the true philosopher seeks not safety, but the most perilous frontiers of knowledge. When Mr. H. C. Brown inquired if the principle of indeterminacy did not controvert Mr. Boodin's principle, Mr. Lenzen suggested that macroscopic pattern is quite compatible with microscopic indeterminacy. Mr. Boodin was loath to take advantage, however, either of Mr. Lenzen's suggestion or of Schrödinger's substitute for Heisenberg's principle, since he believes that the ultimate corpuscular elements do evince a degree of recalcitrance to determination. Mr. Schilpp and Mr. S. C. Pepper felt the necessity of more precise definition of "spirit" and of "space," respectively, but Mr. Boodin had time only to reply that he thought his use of the words was quite ordinary and orthodox.

This very question of what is meant by "space," ignored by Reichenbach and other writers on the philosophy of physics, was the motive of Mr. V. F. Lenzen's treatment of "The Metaphysics of Space and Time." First, space (or space-time) can not be substantival but must be adjectival; must be, in fact, a relational structure, "the manifold or totality of possible positions of things." Second, this relational structure can not be other than the metrical structure which we explore, or construct, with our measuring rods. Third, since a metrical structure is defined by a configuration of rigid bodies at rest to one another, it is what the relativity formulae deal with as a frame of reference. We can consider different frames as different spaces, or we can discard as otiose the concept of space, or we can think of a metaphysical space in which frames of reference move. Fourth, although the application of the relativity formulae requires the operational view of concepts, the objects of the concepts are not operations, but are the observed coincidences upon which measurement is based, and space may be called "the manifold of possible coincidences."

Mr. Lenzen accepted Mr. Brown's indication of a discrepancy between the definitions of space as "the manifold of possible positions" and as "the relational structure of things in space," but in discussion with Mr. Brown and Mr. Boodin he did not agree that Weyl has evidence of a constraint by space which would necessitate the substantival theory. The latter is a possible metaphysical concept, but is non-empirical and non-physical. Mr. Brown objected that there are no rigid rods in reality while Mr. H. G. Townsend objected that

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there may be, but Mr. Lenzen professed himself content with the possibility of applying to ordinary rods his "principle of successive approximation." Mr. Savery remarked on the epistemological importance of the question whether the "possible relations" of a theory like Mr. Lenzen's must be translated into actual ones.

Mr. J. Loewenberg concluded the first session with a searching and sympathetic account of "Meyerson's Critique of Pure Reason," as this appears especially in a new work, *Du Cheminement de la Pensée.* Although Meyerson goes beyond Kant in his emphasis on the identifying function of the intellect, Mr. Loewenberg traced a striking and instructive analogy between the two philosophers' views of the joint operation of the matter of sense and the forms of thought, and of the tragic "transcendental illusion" by which the intellect is obsessed forever by an ideal of pure perfection which it can not attain and which would be irrational emptiness if it could. This situation Mr. Loewenberg could interpret with especial aptness within his own "Problematic Realism," which emphasizes with Meyerson that all theory is only "plausible," because reality is essentially and forever a problem, the retreating goal or "elastic limit" of our inquiry.

Mr. E. A. Burtt saw in Mr. Loewenberg's vivid account a *reductio ad absurdum* of Meyerson's theory of reason, since an "identity" which is never attainable, and which so far as approached is a falsification of the object, makes all thought a wretched absurdity; but he believed that Meyerson's own practice really relies on a more empirical and pragmatic kind of intelligence.

Inaugurating a "Symposium on Recent Contributions to Epistemology," with a discussion of "Analysis as Philosophical Method," Mr. Hugh Miller contended that the brilliant realistic polemic which has cleared the air of this generation has still failed to impugn the primacy of the theory of knowledge. Indeed, the extreme realist is quite naïvely idealistic in his confidence that thought is completely relevant and transparent to reality, whereas he ought to be convinced by the whole apparatus of biological and psychological sophistication, on which he prides himself, that knowledge is an interested and refracting medium. In particular, the realist's method of analysis must always be in practice a sort of creative synthesis whose results are determined by much more than an inexorable structure in its subject-matter. Mr. Miller calls on philosophers, therefore, to erect on this fact of the implication of the knowing mind in the world process a new science to show that the living interests embodied in our knowledge can reveal a whole world of vital fact outside.

Mr. D. S. Mackay advanced "A Critique of Lovejoy's Epistemology," by arguing that "The Displacement of the Datum," that is,

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the notorious spatial or temporal disparity which is apparent between the perceptual datum and its external object, has not the decisive relevance which Lovejoy believes. In the first place, we can not find in the displacement any real evidence that the datum is neither a part nor an attribute of the object without the assumption of a great deal more about both datum and object than we can really possibly know. And in the second place, the question whether the datum is literally identical with the object is trivial and almost irrelevant anyway. The really important link by which the datum "belongs" to its object is the relation of *indication,* which is unique and irreducible, and to it alone pertain the only genuine epistemological problems.

Mr. Burtt prefaced his paper by an admonition lest Mr. Miller's proposed biological metaphysics prejudge the case against rationalism and realism, and lest Mr. Mackay's relation of indication be taken as an answer to the question instead of as a key to positive research. In his own "Critique of Cohen's Epistemology," he saw *Reason and Nature* proffered in express contrast to *Experience and Nature,* and proposed that it is equally unscientific and wishful thinking to declare unreservedly with Cohen that "rational order is the very substance of nature" and to declare with the opposition that nature is irrational. The true lesson of scientific method is against absolutism, and especially against the absolutism of the realist when he avers that "the world is what it is regardless of our minds." In particular, Cohen's attribution of reason to nature is either meaningless or false without the stipulation of the context and conditions in which it is to be understood.

In the general discussion of the symposium, Mr. Boodin reminded Mr. Miller that although knowledge is indeed an all too human enterprise, there is surely a constant progress toward objectivity of technique and method, and reminded Mr. Mackay that the datum is our only actual contact with reality, even in science, and that its status can be better understood by means of the concept of perspectives. Mr. Townsend and Mr. Piatt both objected that Mr. Burtt's extreme statement of cognitive relativity was virtually a denial that any opinion could be wrong. Mr. Townsend, Mr. H. W. Schneider, and Mr. Savery all concurred that Mr. Burtt had exaggerated the rationalism of Cohen, who merely asserts the intelligibility of the world and a confidence in reason as against intuition, while Mr. Pepper proposed that the heart of Cohen's rationalism is an implicit faith in a subsistential realm of rational principle.

Without leaving the rationalistic issue, the discussion returned to the morning's criticism of Meyerson. Mr. H. J. Smith and Mr. Schilpp both accused Mr. Burtt of caricaturing Meyerson's ration-

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alism, and the symposium was brought to an authoritative climax by Mr. Loewenberg's statement of the distinction between the rationalism of method, which must be adopted by every philosophy that is better than nonsense, and the rationalism of content, which imputes the forms of thought to the content or object of thought. Meyerson's epistemology, he contended, attempts nothing more than the discrimination of the sensible and intelligible aspects of experience, and does not hypostatize them.

The *pièce de resistance* of our whole feast of reason was, of course, the presidential address of Mr. Savery, "Chance and Cosmogony." It turned out to be a very meaty offering indeed, and only the tradition against discussion of such addresses forestalled an all-night debate between those who saw in it an overwhelming scientific disposal of some of the most persistent problems of philosophy, and those who saw in it only a startling but comparatively sterile *tour de force*. I confess that I sided with the majority, in the former category, but certainly nobody failed to be dazzled and impressed.

In concise and rapid paragraphs, marshalled by number and letter, Mr. Savery began at the beginning with a capitulation of some salient conclusions of the theory of probability, especially those of Peirce and Nicod, with reference to the principles of scientific induction. Granted certain minimum assumptions with regard to memory, extrapolation, and antecedent probability, we were asked by Mr. Savery to apply with scientific seriousness the canons of relevancy and parsimony. He defended the latter against the criticisms of Poincaré, and in supplementation of the canon of relevancy, maintained that an irrelevant or non-contributive element of a hypothesis is not only otiose but is positively *im*probable. He therefore disparaged as "the principle of credulity" Sir Oliver Lodge's assumption that there is no antecedent probability against even the most preposterous hypothesis.

Wielding Occam's razor, Mr. Savery declared that idealism is "hopeless," that Berkeley's God is more complicated than matter, that the *Ens realissimum* instead of being a rational certitude is the most improbable of conceivable hypotheses; that monism, although psychologically simple, is logically more complex and less probable than "concatenism"; that absolute idealism has the compound improbability of idealism and monism; that a finite space and time are more probable than an infinite; that a subsistent world of Ideas and the existence of prime matter or substance enjoy each an extreme antecedent improbability.

Taking the question of cosmic teleology as a large test case, Mr. Savery applied his inductive principles to reject the hypotheses of a designer and of orthogenesis, in favor of the hypothesis of

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variation and selection. On the other hand, he saw no real logical reason to deny emergence. With more special regard to "chance and cosmogony," Mr. Savery rejected logical determinism and teleological determinism, and declared for an indefinite amount of both initial and subsequent causal indeterminism. He deplored the tendency of "theological scientists," like Millikan, Eddington, and Jeans, to regard the extent of their ignorance as justification for believing the most improbable of idealistic hypotheses. On the other hand, he held, the probability is overwhelmingly in favor of a common causal ancestry for the countless similar elements of the world. He proposed, therefore, the hypothesis of one cosmic moulding agency, whose nature is ultimately mysterious, working continuously since the beginning, and revealed in the mystic vision which comes, when it comes, literally by chance!

The Association convened Tuesday morning to adopt resolutions of tribute to two eminent philosophers whose death occurred during the preceding year: George Herbert Mead, who last year read the Carus lectures before the Pacific Association, and Herbert Wildon Carr, sometime president of the Pacific Association. Mr. R. T. Flewelling added to his formal resolution a more personal appreciation, "Wildon Carr, Philosopher and Friend," which was signally effective in voicing the regret of his colleagues at the loss of the fellowship of that strong, gentle, and generous mind. Mr. Flewelling touched on some of the larger features of a remarkable career which, at an age of 55, abandoned the London stock exchange for the Aristotelian Society, and which still later was to abandon London for the School of Philosophy of the University of Southern California. The keynote of Wildon Carr's philosophy, he pointed out, was the attempt to interpret the physics and astronomy of the modern relativists in terms of a personalistic metaphysics. Although the author of numerous original and important speculative works, Professor Carr saw in philosophy not a body of information to be imparted but "an introduction to the age-long questioning."

"Ethics as Pure Postulate" was the formula with which Mr. D. C. Williams suggested that ethical systems may turn out to be unarguable because each such system consists only of the deductive consequences of certain supreme ethical principles which are not in any legitimate sense either true or false, but are ultimate postulates resolved upon by their proponents. To resolve upon a postulate as to the nature of "good" is to choose a way of life, and he inquired into the possibilities that the process of postulation is limited by experience, by metaphysics, by logic, and by nothing at all. The most general adverse criticism turned upon the possibility or usefulness of such an apparent intellectualization of ethics. Mr. H.

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W. Stuart, in particular, not only doubted the cogency of the arguments for the postulational nature of ethics, but also, with Mr. W. H. Long, doubted if the concept could throw light on the real and concrete problems of ethical adjustment. Mr. Pepper thought that in spite of Mr. Williams' claim to an instrumental interpretation of logical system, he was really, and profitlessly, sacrificing instrumentalism to the method of symbolic logic. On the other hand, Mr. Loewenberg and Mr. Prall defended and interpreted the notion, albeit they confessed it might amount to denying the possibility of any real ethics, and Mr. Miller found it a promising implement in the field of political theory. Mr. Boodin indicated that there need be no ultimate disparity between Mr. Williams' intellectualizing procedure and the practical moralistic procedure advocated by Mr. Stuart, while Mr. Savery saw in the doctrine the only tenable alternative to his own theory of the indefinable good.

Mr. F. Anderson's "A Theory of Meaning" presented "a good all-round dictionary definition" of meaning as "a relation between two associated ideas one of which is more interesting than the other." The latter is the "symbol" and the former is the "goal." Such a definition would avoid the twin fallacies that words, for instance, literally "convey" meanings, and that a meaning is merely context. Meaning is to be distinguished from the relation of designation which holds from idea to object and from the relation of implication which holds from one objective event to another. Mr. Anderson emphasized the invincible defects of language as an attempt to depict reality, and believed that the subterfuges of mathematical symbolism only accentuate these defects.

Mr. Loewenberg congratulated Mr. Anderson on exhibiting the *problem* of meaning, but demanded for its solution a complete "propositional analysis" which would consider that a meaning is *by* somebody, *through* a vehicle, *in* a context, and *about* something. Mr. Townsend and Mr. Prall felt they could abstract from some of these factors. Mr. Long followed up Mr. Anderson's distinction of meaning and implication with the suggestion that the former term be reserved for values and purposes. Mr. Boodin believed that it can be literally true, in passionate social situations, that symbols are "charged" with meaning. Mr. Anderson replied to Mr. Boodin that in most such situations there is no meaningful symbol at all, but only a "signal" which operates as a conditioned stimulus to mob action, and to Mr. Loewenberg that his intention was more modest than the recondite inquiry which Mr. Loewenberg proposed.

The first, and briefest, of the contributions to the final session was Mr. B. A. G. Fuller's urbane and delightful "Spinozistic Comments," which agitated again the question of the "infinite attri-

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butes." Following a clue from H. F. Hallett's *Aeternitas*, Mr. Fuller suggested that the infinite self-repetition of space as well as the infinite self-repetition of thought can be interpreted as an intimation of the infinite other attributes. To take seriously this possibility has the positive value of chastening the arrogance both of the idealists and of the materialists. The idealists especially are impudent in their assumption of moral superiority, as though they were doing the world a favor by denying it the right to materiality. Mr. Townsend and Mr. Prall took issue with Mr. Fuller and with each other with regard to Spinoza's opinion on essence, existence, and the priority of the attributes, while Mr. Burtt and Mr. Boodin saw typified in Spinoza some inveterate problems of philosophical method. Mr. Fuller complained, however, that his own contribution was being lost in the battle of the exegetes. He reiterated that he was only defending the plausibility of the infinite attributes, and suggested that the mystic experience may be a revelation of a third attribute.

The life-long conflict of F. C. S. Schiller with the formal logicians has been mostly "fighting shadows and casting shadows," according to Mr. Smith, who proposed that "Logic and Psychologic" can best be understood as two aspects of the same subject-matter. Thought always has contexts and purposes, but the formal abstractions of logic are not perverse additions, but are actually found in these contexts. The formalist deplores as much as Schiller the ineptness and uselessness of many abstractions, but the remedy is better abstraction and not none. There is no rational validity outside of perduring patterns. As a matter of fact, Schiller admits the usefulness of the abstractive procedure, and although he can call it psychologic if he likes, it is what most logicians call logic. Mr. H. C. Lanz approved Mr. Smith's pacific intentions and agreed vehemently that Schiller's "formal logician" is a grotesque invention for the purpose of refutation, since every real logician since Hegel has been on Schiller's side. On the other hand, he doubted if Mr. Smith's two-aspect theory would satisfy either party, and suggested that it is not abstraction but meaning whose explication would clarify Schiller's problem. Mr. Smith however persisted that meaning is rather a special case of abstraction.

Mr. D. A. Piatt's "Nature, Mind, and Congruence" was a compact and deep-going treatment of the conditions which, in a world of passage and relativity, can still guarantee the intelligibility of nature and the objectivity of knowledge. His "behavioristic version of objective relativism" would first explain the primitive and unreflective congruence between knower and known within a single perspective by the fact that a sensed object represents the possibility of future experience which is realized when the plan of action in-

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herent in its perception is carried out to actual successful contact. Higher types of congruence, however, by which, within society, one perspective comes to share or conform to other perspectives, arise through gestural communication and the creative resolution of conflicts, in which a comparatively subjective and private perspective is supplanted by a comparatively objective and public one. This recognition of mind as a transaction within an active nature establishes for mental perspectives a kind of congruence which surrenders neither to monism nor to dualism, while outside of minds there need be no congruence at all.

Mr. Savery criticized, in general terms, the instrumentalist's propensity to reduce all reference to future reference, and to deny the reality of other than conscious perspectives. Mr. Piatt, regretting the inherent difficulty of some instrumentalism as much as the difficulties invented by some of its critics, found himself in considerable accord with Mr. Savery's amendments, and felt that his own instrumentalism avoided both of these excesses.

Perhaps a contributing feature to the success of the meeting was the congeniality and vivacity of a comparatively small attendance, and this in turn may have been due to a spell of the most unusual weather which California has produced for a long time. Those who follow the gleam to Palo Alto had to submit to the natural selection exercised by incessant storms, flooded highways, and avalanche-buried railroads. The earnest survivors, however, found themselves cozily entertained at the Stanford Union and, for the actual philosophical sessions, in the hospitable lounge of the Women's Club House.

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## ON THE LOGICAL POSITIVISM OF THE VIENNESE CIRCLE

AMERICAN attention has already, upon several occasions, been directed by adequate expositions to the new positivist movement centering in Vienna and Berlin. In offering the following peripheral comments, my purpose is rather to mention some minor additional aspects, and then in re-surveying the fundamental points from an American's parting perspective after a short period of study at Vienna, to present another more critical point of view.

A union of the Viennese positivist tradition rooted in Ernst Mach, Boltzmann, and Brentano, with the new mathematical logic that has developed through Frege, Peano, Russell, Whitehead, and Wittgenstein, occurs in the recent writings of the members of the

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Viennese Circle. Among the more prominent names to be mentioned are those of Moritz Schlick, Rudolf Carnap, Hans Hahn, Friedrich Waismann, Otto Neurath, and Hans Reichenbach of Berlin. Although essentially the same as in expressed viewpoints of the individual members, the philosophy of the "Wiener Kreis" is unique in that it was formulated for the first time in a concise joint manifesto [1] (containing a complete bibliography) published by the Mach Society in Vienna to signalize Professor Schlick's return from California. It is from this fundamental comprehensive source that I shall generally draw my material for analysis.

Perhaps the most outstanding feature of the new movement is the rehabilitation of the positivist repudiation of metaphysics by adopting the Logicist position of Russell and Wittgenstein. The total viewpoint thus develops into a fundamental rejection of all Rationalism as well as all metaphysics, of reason as an instrument for obtaining real "content." It is based on a conception of mathematics, logic, and of all rational processes as purely tautological, as processes merely of rearrangement of empirical content. The rôle of logic is seen as never inductive, since knowledge is only gained empirically. The conclusion of a syllogism expresses only what is already contained in the premises or less. For example, the knowledge that Cassius is mortal is no more than re-expression of the actual knowledge (or less) that all men are mortal, and that Cassius is a man.

Further, "There is only empirical knowledge which rests upon the directly given. With this the boundaries for the content of legitimate science are drawn." [2] A thing is real in so far as it orders itself into the total structure of our experience, and a statement is worth only what is yielded in its verification.

This same total viewpoint has been elsewhere [3] formulated as stating that in accordance with the Wittgenstein view of language as pure structure, the propositions of empirical science are held to express only the formal structure and not the content of experience. Knowledge is thus defined as the communication of structure by means of symbols (language). It merely "expresses the form and points to the content."

The point which I wish to make here in criticism is that knowledge is precisely form which *is* content. The foregoing logicist attitude would be significant only if there were no structure in experience itself, that is, no real relationships, which are expressed in

[1] *Wissenschaftliche Weltauffassung der Wiener Kreis.* Ernst Mach Verein. Artur Wolf Verlag. Wien. 1929.

[2] *Ibid.*, p. 19.

[3] By Feigl and Blumberg in this JOURNAL, Vol. XXVIII (1931), pp. 281-296.

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the "structure" of language and knowledge; or if "structure" were somehow different and inferior to "content." If subjective structure creations parallel and express objective structure then they are actually "content" and are really inductive.

Furthermore, if such purely structural creations are seen as not simultaneously real, the definition of knowledge as the communication of structure leaves a theoretical distinction between the real and the known. Such a definite distinction is in itself not only pure metaphysics, but is an acceptance of sophism not admissible in philosophy seeking cognition. Thus the definition of language and knowledge as pure structure is either unimportant or inadmissible.

Despite all minimizing, logical and mathematical operations do create new relationship forms (conclusions) based on the known, directly empirical nature of their component entities or facts. As we shall see, the value of these relationship forms can not fairly be underestimated. We can not thus say that by dealing with and creating "structure" we can not obtain "content" unless we can show that one is not the other, and that one is of inferior value. Discrediting the actual function of mind in this way along with historical rationalism is hardly feasible.

In general, this logical-positivist effort to bifurcate cognition into two discrete factors—the formal or rational and the empirical, seems to me to embody a thoroughly erroneous view of their actual immanence in experience itself. I can not understand the meaning of "form" as opposed to "content," or why "form" itself is not "content." (Especially since the Viennese themselves repudiate the concept of Substance.) To attempt in addition a comparative evaluation of these artificially divorced factors (reason and experience) is futile, since form is an essential product of both.

For the function of mind within immediate experience itself is actually so integral that to eliminate it would leave us not with content but with chaos. If we discard the mentally formed aspects, we should have experience without relationships or uniformities or coherence. Empirical relationships do not occur between objects and experience, but between objects in experience and in memory. For example, in order to determine whether one apple is a deeper red than another, whether two lines are parallel, whether a velocity has increased, we compare two observations, one previously experienced and still in memory, with a second one being made at the time of judgment. Furthermore, the relationships themselves (causation, etc.), as distinguished from the related object, are results of purely mental perception. If we eliminate the creation of mental patterns of relationship within the actual process of experience itself, only chaotic sense impressions are left. It is only through these mental

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form creations, which are at the same time true as objective relationships, that we can penetrate and surmount the atomistic incidents of experience to discover the greater functional relationships and patterns of operation—the truer "content." Without these, we lack the most primary requisites of science, such as knowledge of direction or of similarity or of dissimilarity. Because they are mental functions in experience itself, it is natural that relations are dealt with by the formal sciences (logic and mathematics), but in so far as they deal in empirically valid terms, they create real relationships which are no more "tautological" or less valuable than the relationships obtained in immediate mental-physical experience.

To me this whole situation of mathematical logic repudiating rationalism, and finally defining knowledge as "form" divorced from "content," embodies a rather strange paradox. For it is only since the development of the "new" logic by mathematicians that logic has come to embody purely abstract operations and to forsake its original nature as essentially linked with experience. As I understand it, logic has hitherto been an axiomatic science which worked with basic abstracted generalizations from experience. For example, the law of the excluded middle, as well as other basic Aristotelian axioms, are merely general expressions of simple empirical truths. Logic was a kind of simplification, but no more, of the empirical resolution of problems, in which general empirical truths were taken for granted and used as abstract axioms instead of being verified each time. That is, logical forms were essentially empirical forms.

Mathematics, on the other hand, departed much sooner from consciously empirical territory and has become more a science of independently abstract entities. Especially in the last century, with the opening of the realm of "transfinite" numbers by George Cantor, and the influence of Russell, a movement culminating in Hilbert's metamathematics and in metalogic has carried mathematical thought into the dizziest regions of pure abstraction. With the effort of the logicist school, led by Whitehead and Russell, to translate and fuse mathematical theory with logic, much of this actually pure-form creation as a characteristic of mathematics has come to be associated with logic as well, and to tinge the concept of all rational activity.

With this tendency developing from their midst, it is indeed easy to see how the logical-positivists came to stress the emptiness of tortuous, objectively meaningless rationalism. Nevertheless, the position that they have adopted seems to be unsoundly extreme—i.e., to repudiate all mental form-creations as "empty re-arrangements," to distinguish between "form" and "content." As we have seen, the legitimate relationship patterns created by mind are equally

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valuable with experience in so far as they equal the patterns which mind obtains in experiencing. The point is only that for "content" we must confine logical operations to reality, and as we deal in real characteristics, obtain real relationships.

Other efforts, from the Viennese standpoint, to elevate simple "pure" experience above philosophic questions and before the mental element, also fail under analysis. For example, an object is considered real simply when it "orders itself" into the total structure of our experience.

In the first place, it is a question not of "ordering itself," but of a mental classification according to mental class (relationship) patterns. Thus, for example, we distinguish between normal experience and dream experience by setting all the eccentricities of the latter aside in a separate class of our experience. This so-called "setting aside" of irregularities in empirical concepts is scientifically not admissible however, unless based on a rejection or re-valuation of the discordant experiences themselves—as e.g., a rejection of dream experience as "not real." (For otherwise they would have to be treated as necessary modifications or alterations of our idea of certain facts of experience.) In other words, the question of the reality of new experience here precedes, rather than follows, its orderability into the total structure of our experience.

If science had actually accepted things as real solely on their orderability in previous knowledge, new and isolated empirical complications or contradictions of accepted belief would never have been admitted to cause progress beyond the most naïvely simple theory. What this viewpoint does not take into account, is the fact that evaluation of an experience as real requires some judgment upon the mode or circumstances of the experience itself. We have seen that this must precede orderability in dealing with dream experience; such is the fact *within* scientific experience as well. All acceptance of new and complicating experimental data is based on evaluating the mode of experience (the whole method of experimental observation) as a criterion of reality overbalancing the disorder which the given fact constitutes in our total experience. The incidental verbalistic argument that we can order dream experience (or other experience) aside without any judgment as to its reality, contradicts the more expressive fact and meaning of excluding such experiences as determinants of our activity directed toward reality. Thus in this sense, again, simple positivist acceptance of sense experience as beyond philosophic question, must give way to critical subjective criteria more important than the mere fact of given sense-experience itself.

The strayings of historical metaphysics are traceable to their

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unanalyzed and erroneous ideas of basic terms and natural phenomena (especially, for example, of Causation) rather than the validity of rational forms as real relationships given correct component concepts. As in the case of transcendental mathematics, divorce of rational relationships from reality occurs only in accordance with a divorce from real component terms. We have seen that mentally obtained relationships are not only fully as significant as sense data, but are an essential immanent part of immediate experience, and thus a comparative evaluation is impossible.

A second general portion of the Viennese viewpoint is the more purely logical aspect as combined with the foregoing positivist standpoint. All metaphysics is repudiated as legitimate science and is relegated to the more innocuous realms of expression—as "art." Thus, to practise philosophy is solely to clarify the laws and concepts of science by logical analysis.

The instrument for this is the "new" logic, that is, Russellian logic as opposed to Aristotelian-scholastic. In its dependence on grammatical syntax, which may vary from logical syntax, and in its lack of precision, Aristotelian logic is seen as totally inadequate. On the other hand, with the new symbolic mode of expression, with newly developed relational logic, and with the theory of variable functions which enables an escape from the purely predicative nature of the old logic, the new mathematical logic since Frege gives the hitherto lacking sharpness of deductive processes. In Russell's Theory of Types is seen the conquest of the problem of antinomies. Mathematics is viewed as a branch of logic and both as mutually translatable and as purely tautological.

From this general basic attitude, the practical activities of the Viennese Circle, led chiefly by Professor Carnap, have been concentrated in logic on the construction of the "Constitution System" of concepts. This is a structural system of all concepts intended to serve as the criterion of legitimacy in philosophic argumentation. In it, every scientific concept must find its fundamental position in accordance with its deduction from other concepts, and finally, from the empirically given. The best idea of the general nature of this system which is being evolved, is perhaps given in Carnap's *Der logische Aufbau der Welt* (Benary, Berlin, 1928).

We have already discussed the meaning of the tautological view of logic and mathematics. As to the further standpoint, while in thorough agreement as to the merits of symbolic logic, I feel that it should be remembered that many statements are still highly controversial within mathematical logic itself. The effort of the logicist school to translate mathematics wholly into logic has not yet been

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carried through with complete success, and the problem left by Russell's own sacrifice of his Principle of Reducibility after Wittgenstein's critique, leaves a certain incompleteness and inadequacy in the Theory of Types.

The theory of a logical system in which all legitimate concepts must find their place in their plane of derivation from the given, sets up a not untenable means of judging concepts by their derivation. It is argued that this synthetic logic is the real groundwork underlying all modes of logical expression, as it is, for example, common to all languages, and thus is in itself, the only one known or possible. It seems to me, nevertheless, that the question of whether several systematic versions of the same logical truths might not be built up from different starting points, ought not to be so easily dismissed.

Furthermore, the reason for the constancy of the logic underlying the various languages, is the universal constancy in the nature of the simple experience expressed by these varying symbols. Words in every language express in different symbols the same experiences, which represent static constant functions. That is, "Light," in English represents the same simply experienced phenomenon and functional relationships that "Licht" represents in German, and "lumière" in French. Thus, for naïve experience, logical relations, which represent perceived real relations, are universally constant. The point here is that, as this constancy of relations and functions gives way to probability in scientific experience (quantum physics), an extremely rigid logical constancy becomes less adapted to deal with and represent physical reality. The idea of constant functions or a single closed system of axioms in logic, depends on the existence of these same characteristics in all experience, which is thrown into scientific doubt by the indeterminacy of quantum physics. We deal in physics apparently not (as a hypothetical example) with constant "light," but with something that may or may not preserve its characteristics, in other words, with varying functions. The point here is specifically that this fact makes necessary not merely logical concepts which are variables, but also variable systems of axioms. Thus such a single closed criterion system of "all scientific concepts" (even if at all possible) would meet with much difficulty and controversy in application to descriptions of all spheres of reality—so much as to blur decidedly its dogmatic value as a simple final criterion.

I wish here in no way to minimize the superb achievements of relational and symbolic logic, and I see the Viennese desire to utilize them as most praiseworthy. It is only their exclusive emphasis upon this single dogmatic criterion that inclines me to mention the above indications that mathematical logic is in itself not yet a

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magic panacea. Limited as we are by the meagerness of our perceptive weapons, it seems an unnecessarily over-confident move to impoverish them still further by wholesale repudiations and by limitation to a single system of "all scientific concepts." The formulae of logic itself serve only in many instances to present a question for judgment by sheer, unmechanized, "totality" perception, as in the *reductio ad absurdum*. In the still not completely mastered realm of antinomies we can remember Zeno in the very recent past as a proof of the real value of extra-logical judgments, despite all the apparent efficacy of formal criteria. For such reasons, those who do not subscribe completely to the Viennese views will in practice retain other criteria of the legitimacy of concepts (as perhaps the Viennese themselves do). But in any case, the recognizedly fertile field for operation in this direction makes the logical-positivism activity one of undoubted value.

In addition to their work on the Constitution System, the members of the Viennese Circle have adopted a positive programme of activity within the special fields. For brief example, in geometry, work is on axiomatics and the further separation of physical and mathematical geometry along the general lines begun by Poincaré, Duhem, and Helmholtz. In physics work is on hypotheses and the elimination of outmoded anthropomorphic concepts (such as that of Substance, which is seen as supplanted by modern field and atomic theories); and on the translation of Causation's "necessary connection" character into the empirically comprehensible idea of a conditional relationship. In biology such theories as Vitalism and Driesch's Entelechies are repudiated as not reducible to the empirically given. In the social sciences an attitude rooted generally in Hume, Comte, Bentham, Marx, and Spencer, is maintained, in general opposed to all metaphysical and mystical theories of social development.

This intimate and positive relationship to the special sciences is a result of one of the fundamental aspects of the logical-positivism movement, the one which seeks to break down the isolation of the various fields of scientific research. Their aim is to bring the result of research workers in the special fields together for the mutual benefits of comparison and stimulation, and to fuse the whole into a single coherent natural view. This activity is carried on thus far chiefly in *Die Erkenntnis,* formerly the philosophic review *Annalen der Philosophie,* which is now edited by Professor Carnap, and Professor Reichenbach of Berlin.

That this general effort of Viennese positivism is an extremely praiseworthy step in an obviously necessary direction for philosophy is an almost needless comment. In connection with this programme,

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however, there are certain indications of a point of view to which exception may be taken. Contained in its hostility towards all metaphysics and its repudiation of metaphysical problems as meaningless groupings of words (*Scheinprobleme*) is a tendency towards superficiality in scope. Repudiation of the content of classical metaphysics can not be construed as necessary repudiation of the rôle it sought to fill. Such "metaphysical" questions as contain (imply) legitimate critique upon experience as real cognition (e.g., as brought up by Poincaré, and Einstein and Dingler in Germany) must be retained and dealt with, if philosophy is to retain its essential nature as a quest for the truest and most objective physical orientation. There can be no philosophic disregard of an answer wherever there is possibility of real question, whatever its relation to an arbitrary or mechanical criterion of legitimacy.

If I may attempt a final summary, the foregoing points at issue with "logical positivism" might be grouped under the following headings: (1) The fact that "structure" constitutes or is equivalent to "content" vitiates any significance of describing rational form creations as tautologies, in a limitative or depreciative sense. (2) Orderability of an experience into the total structure of previous experience is not what determines its reality. (3) The possibility or practical feasibility of a single, final criterion system of all scientific (legitimate) concepts is highly questionable. (4) Philosophy must retain all real questions, even the "metaphysical" effort to understand, evaluate, and orientate the process of immediate sense experience itself—despite all catchword general repudiations.

In conclusion I wish to say that the foregoing critical survey of the new "logical positivism" is in no sense polemic, but is motivated especially by a desire to stimulate further discussion, thought, and progress in the same direction. Criticism has not been directed toward the generally admirable goals of the movement, but rather toward certain elements of intolerance and superficiality within it, based chiefly perhaps on a too optimistic evaluation of the present stage of symbolic logic and of naïveté toward simple experience.

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## BOOK REVIEWS

*The Faith of a Moralist.* A. E. TAYLOR. New York: Macmillan Co. 1930. 2 vols. Pp. xx + 437; xxii + 437.

Some thirty years ago, at the outset of his career, Professor Taylor produced two systematic works of high excellence, one on ethics and

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the other on metaphysics. In the long period that has intervened he has published much in the way of commentary, occasional lectures, and brief studies of individual philosophers, but nothing that resumed the attempt at construction on a considerable scale. In the present work he returns to the kind of task that has so long been laid aside. Whether *The Faith of a Moralist* fulfills the great expectations to which the early work gave rise will be a matter of differing opinion. In some respects it will be admitted on all hands as masterly. For combined ripeness of scholarship and felicity of style, Professor Taylor has perhaps no equal writing in English. But on the main point one must speak a little less confidently. In the years that have elapsed since his first books, he has made a "spiritual pilgrimage" which has carried him philosophically and theologically into the position of the high-church Anglican. This position he takes with the greatest seriousness, and as a result we have in this book something which I think is novel among Gifford lectures, an attempt at philosophic justification of what is accepted as the orthodox belief of a particular branch of the Christian church. To be sure the book is not quite this ostensibly, for it conforms with conscientious care to the Gifford requirements that it treat of "natural theology." But though the appeal is always to reason, the answer that reason gives is so uniformly favorable to a particular view of Christianity as to make one wonder whether Professor Taylor's great speculative gifts are longer free, or whether they have not, in the true Catholic manner, entered a voluntary servitude to faith. At any rate it is the continual and powerful attraction of the orthodox position upon his own that is most likely to make readers doubt whether he is here breaking any new ground.

The argument of the first volume, which lays the foundation for the whole, is in outline this: Ethics, although a science of what ought to be, has implications of the greatest importance regarding what *is*. If this is not commonly seen, it is because there is a generally accepted notion that one can draw a clear-cut line between values and facts, and hence between the corresponding sciences. This is a cardinal error. Just as the attempt to leave primary qualities in the object and make the secondaries an illusion has broken down, so the attempt to leave both primaries and secondaries in the object and make the tertiaries an illusion has also broken down. All qualities equally are found; none are invented. Hence when we describe men as more or less good or bad, we are describing actual facts, and not illusions or mere ideals. And these facts must be taken into account in any theory about the real.

Professor Taylor proceeds to examine these facts more narrowly. What we find underlying all the facts of the moral life, he says, is

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the struggle of a temporal being to put on eternity. Since this very dark saying is the key to the whole work, we must try to get it clear. Professor Taylor, in agreement with Dr. McTaggart, distinguishes within the time order two different series, the series of before and after, and the series of past, present, and future; and, again like Dr. McTaggart, he considers that it is the second which gives to the time we know its distinctive character. Now he believes that moral advance in a process of transcending this character, and that with the attainment of the moral end we should have transcended it completely. This conclusion he reaches by an analysis of our experience of what is good. Just so far as we are experiencing what genuinely satisfies us, we are effecting an escape from the temporal order, for in such satisfaction we are without awareness of a "no longer" which could excite regret, or of the "not yet" of unfulfilled desire. And because the goods sought by the humanitarian can not give such satisfaction, the view that they are the only goods we know would imply that we must end in moral defeat; " 'meliorism' is only a foolish *alias* for pessimism." "There must be a sense in which we can be really in fruition, permanently established in a good beyond which there is no better. In the measure in which this can be truly said of any life, we may also say of that life that it is already shot through with the distinctive character of eternity and is an abiding now" (Vol. I, p. 100).

The process of moral struggle and advance is not for Professor Taylor, as it is for some other idealists, a mere appearance; both it and the time in which it takes place are ultimate realities. But so also is the timelessness attained through it. From these two positions follow two others of great importance. Since the process of struggle is real; the evil which is an essential moment in the struggle is real also; and Professor Taylor is outspoken against both the moralists who deal too casually with the problem of evil—a group in which he would include all but Plato and Kant—and those metaphysicians who would make evil an illusion. But secondly, to attain a timeless experience is to lay hold of the supernatural. Thus for Taylor morals and religion are inseparable, since the one inevitably issues in the other. The achievement of insight into the supernatural, however, and the strength to conform to this insight are not considered the achievement of the natural man; there is nothing in mere instinct or feeling to account for a man's devotion to duty for its own sake; such devotion is beyond explanation unless we accept a doctrine of "the initiative of the eternal," which is Taylor's name for the doctrine of grace. Thus the moral life at every level is in its degree a manifestation of the divine.

If we consider what is implied in such a life, we shall see that

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it carries for a moral agent an immortal destiny. Professor Taylor finds small value in metaphysical arguments for immortality and still less in psychical research, but he takes the moral argument most seriously. Dr. McTaggart, as is well known, had summarily rejected this argument, and Professor Taylor prefaces his own statement of it by weighing the grounds of this rejection. McTaggart had argued that we can not reason from the goodness of anything to the conclusion that it must exist, or from its badness to its non-existence, for the simple reason that so much that is bad plainly exists already. Taylor's reply is to question the "plainly"; what seems to be bad may turn out far other than it seems, since, for all we know, it is the necessary component and condition of an unknown good. This is a common enough mode of argument, but surely it is unconvincing. It implies that the testimony of experience is worthless until that experience is complete, and such an assumption seems scarcely consistent with argument at all.

Professor Taylor formulates the moral argument very much in the manner of Kant: "since the moral law can rightfully command us to live as aspirants to eternity, eternity must really be our destination" (Vol. I, p. 281). Let us begin, he would say, by agreeing that whatever we ought to do we can do. Let us then ask ourselves whether in seeking merely temporal goods, among which he would include "natural knowledge and sensible beauty" along with health and comfort, we are measuring up to the "ought." He is clear that we are not, that "if we make humanitarianism, however generous, our supreme rule of life, we are living only for the second-best." "The end, in fact, is to 'follow God,'" and "*this* end is not pleasing yourself without prejudice to the equal claim of your neighbor to please himself; it is wholly different from any kind of self-pleasing." It is rather "the remaking of character round a new centre," "the dying out of the natural man into the spiritual man," the sort of detachment from temporal goods which enables a man to give them all up, not grudgingly but gladly, and yet to see that he has not thrown himself away, but has chosen the better part. Such a good is not a natural good, yet duty clearly demands that we pursue it. Thus if what we *ought* to do we *can* do, we are not merely natural agents with a merely natural destiny.

That duty does thus require us to live as citizens of an eternal world is enforced through two long concluding chapters on "Otherworldliness" and "The Goal of the Moral Life." To the otherworldliness that abjures its human responsibilities Professor Taylor is as much opposed as anyone, but he insists that "humanity is best served by those who do not make it their 'god.'" True otherworldliness means the discharge of duty "in a spirit of loyalty to a

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kingdom which is not of this world." Ordinarily there is no conflict between the lower and higher loyalties, but such conflict is by no means impossible; "for no advantage to the whole body of mankind," for example, "may I insult justice by knowingly giving sentence or verdict against the innocent." The moral life presents the picture of a hierarchy of loyalties, and it must be our aim to make the pattern of life suggested by the highest of these the dominant pattern of our lives. And it is a mistake to say, as Bradley does, that with the dominance of the higher and the exclusion of evil from life, morality would cease to be. It is true that there would be no further progress *toward* fruition, but there would still be progress *in* fruition; "even in a society where every member was in actual enjoyment of the 'beatific vision,' it would still remain the fact that some see more of the infinite wealth of the vision than others"; and thus even in the moralist's heaven there could still be growth and mutual aid.

The aim of the first volume is to show that morality, rightly understood, commits one to the belief in God, in grace, and in eternal life. The aim of the second volume is to study the historical forms through which these things have been brought home to men's minds and given influence in practical life. Of these the chief are revelation through historical persons, the appeal to authority, and membership in religious institutions. As regards revelation, Professor Taylor holds that there is no more difficulty in accepting it than in accepting the fact of genius, which is indeed but the same fact from another point of view. Revelation need not be confined to the disclosure of doctrine; indeed "the completest 'revelation' conceivable would be an actual temporal life . . . which should be also, in all its detail, the complete and adequate vehicle of the eternal," and it is Taylor's belief that such a life was once lived. Again, he accepts the miraculous. Why has miracle been so generally rejected by philosophers? The main reason, he says, is that it is thought to challenge that upon which philosophy rests, the rationality of the world. But this is a mistake. "When we say that the world of the historical is rational, and that its rationality is the postulate of sane philosophy, all that we have a right to mean is that this world has a definite pattern which connects its parts in a thoroughgoing unity." But we have no right to say in advance what that pattern is, nor to assume that behind the visible pattern there is not another and dominant one whose ingression into the one we see would disrupt the order of reason. Is the one we see so obviously rational as that? Might not the interruption itself be the requirement of a more profoundly rational order? If so, miracle may occur and reason still hold its sway.

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Nor is there anything irrational, he thinks, in the acceptance of religious authority. Indeed there is no department of experience where authority can be avoided, for what this essentially means is that there is something in what is presented to us which falls beyond our present categories, but which demands that our thought be adjusted to it if we are to lay hold of what is real. Taylor's favorite instance is drawn from sense perception. Here there is always something given which we fail to take up adequately into thought, and yet it would be absurd to try to force it into conformity with our thought; we must conform our thought to it. Similarly with conscience; by conceding its authority and following this faithfully we discover that its claim to authority was from the first justified. Similarly again with religious belief; it must be a *fides quaerens intellectum,* which trusts before it sees clearly, but whose trust is justified by the insight to which the trust leads on.

Once more, just as authority must be accepted in both religious and secular life, so also must ritual. Ritual is not pomp, but convention. And convention, while it limits one's spontaneity, aids immensely in holding the mind to the track of a worship that has been found profitable and in avoiding the expensive anarchy of impulse. That both family and national life are greatly the gainers from the deliberate observance of certain simple rites, regardless of the moment's mood, is easy for Taylor to demonstrate; and he is convinced that the loss to religion would be profound if rituals that have helped many were to be discarded because to a few they are artificial and profitless.

The argument is, of course, far more subtle and complex than so brief a statement can convey. It leaves on the reader's mind a mixed impression. In maintaining the main thesis, that morals entail a supernatural outlook, I think the author has both succeeded and failed. That there is no way of accounting for either the fact or the content of duty on naturalistic grounds, i.e., by the sort of causes that are studied in psychology, he succeeds in making clear. So far, the contention is of course not a new one. It is perhaps the main thesis of Green's *Prolegomena,* and it has been successfully applied to esthetic and logical perception as well as moral. In my own opinion, Professor Taylor is here driving an extra but effective nail into the coffin of a naturalism that is, or ought to be, dead. But he clearly thinks he is doing more. The work of the moral reason is for him something very much more than a principle of order among natural goods, and Green's famous dictum that "there is no other genuine 'enthusiasm of humanity' than one which has travelled the common highway of reason—the life of the good neighbor and honest citizen," is not enough. He thinks of moral reason

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not as a yeast leavening life from within, but rather as a light falling across it from without. By means of this light we discern goods and duties that are beyond, and at times incompatible with, what natural reason would prescribe. But I confess that after carefully studying Professor Taylor's account of it, I remain in uneasy uncertainty whether any such light exists. So long as he takes his stand upon the sort of reason that would have been recognized in common by Sidgwick and Green, the reason that finds its play among natural goods while yet incapable of natural derivation, I can follow and agree. But when he leaves this reason behind, the track of the argument seems to wind up into the clouds and vanish there. He is clear that "it may be a plain duty, for some men at least, and possibly for all men, to sacrifice definite secular good for something different in kind and only dimly apprehended, with the certainty that the sacrifice will never be compensated by any gain in the same kind . . . the question is whether St. Paul was right in saying that this foolishness of the world is wisdom with God" (Vol. I, p. 285). To say that one can not see this difference in kind is no doubt, from Professor Taylor's point of view, to write oneself down as blind. Yet is it possible to attach any meaning to the phrases in which he describes the highest life, "the dying out of the natural man," "the attaining of purity in the secret places of the heart," etc., without going back to secular good for the material? Take one instance: when Taylor touches on the vice of cruelty, he remarks, "So far as I can see, the real ground of our judgment is not that the creature suffers so much . . . I feel sure it is the cruel *man*, rather than the suffering he causes, who is the direct object of our loathing" (Vol. I, p. 348). But can one detach the man in this way from the secular evil that he causes? Surely cruelty without its effects would not be cruelty at all; and pain is an instance *par excellence* of what Taylor would regard as secular. His whole argument turns on the distinction between natural and supernatural goods; yet when he withdraws the content of the natural, what is left is so very nebulous that one can not be sure there is anything there.

Doubt lingers also about the other fundamental distinction, that between the eternal and the temporal. The two distinctions are clearly meant to be parallel, so that as one rises into the realm of the eternal, one is also rising out of the region of a purely natural good. But does the parallel hold? Professor Taylor admits that at times in such secular experience as ordinary social intercourse "the consciousness of past and present falls away," indeed that it does so in some degree in a hot bath. And it is not hard to imagine it falling away completely in, e.g., the absorption of an ideal

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mathematician in his timeless figures and numbers. Such a mind would have risen above the form of "temporality," but it is not apparent that the intrinsic good he would be achieving would be above that of many temporal experiences. And if so, transcendence of the temporal and achievement of the supreme good would not necessarily coincide.

But if Professor Taylor's leading conviction about time is to be accepted, it is hard to see how time can be transcended at all. His leading conviction is that time is a reality; "we have direct and 'irrationalisable' experience of change itself," which no dialectic can explain away. Taylor agrees with McTaggart that, for time, awareness of past, present, and future is essential, since it is essential to change, and change is essential to time. Hence if time is real, this awareness must be real also. Yet is it not precisely this awareness that is said to be transcended as we rise from the temporal to the eternal? Hence what looks at least like a paradox. In rising to that which duty requires us to attain, we are deserting that which reflection requires us to call real. Though time is a reality, we must, if we can, get beyond it. But how can we better our estate by escaping from reality? Indeed if time is real, how can we hope to escape from it at all?

Professor Taylor thinks that the chief stone of stumbling for philosophers as they approach religion is the claim to absolute authority. As he is himself a defender of authority, the philosophic reader awaits the defense with interest. But he finds himself so heartily in agreement with what is said that at the end he rubs his eyes and wonders what potent spell has been worked on him. He begins to perceive on reflection, however, that the appeal to authority which Professor Taylor defends is not that appeal in the common form which seemed so questionable. Instead of the appeal of the fundamentalist to an inerrant scripture or an infallible church, it is the belief in "an element of refractoriness" in our religious experience, a something beyond our grasp, in whose presence our fitting attitude is one of humble inquiry. It is easy for Taylor to show that such an element is present, and to show how reasonable it is for one whose moral or esthetic sight is dim to accept the report of one whose vision is clearer. And his defense of authority, so far as I can see, does not come to more than this. But more is necessary if the general position he is defending is to be made out. The scandal for the philosopher in the orthodox tradition is precisely that beliefs which to him as a philosopher are highly dubious and which, so far as he can see, can be established only by his own laborious method, are handed down to him *ex cathedra* for his acceptance. For the high Anglican, as I understand, some such beliefs *are* handed down

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by the church, which has received them from a divine source, and they are supposed to be believed in virtue of their authoritative origin. The defense that Professor Taylor gives does not justify such acceptance, and yet the general impression is left that the Anglican appeal to authority is a wholly reasonable one. This appeal is contrasted unfavorably, and I think not quite consistently, with certain other appeals. If it is unreasonable for the American fundamentalist, whom Taylor mentions with something like scorn, to acccept beliefs that are philosophically questionable on grounds of scriptural authority, it is not less but more unreasonable for the Anglican, with a presumably wider cultivation, to do essentially the same thing. My point is that Professor Taylor really justifies one view of authority and inadvertently gives the impression that he is justifying another. He is so good a philosopher that the Catholic appeal to authority is too much for him; he is so good a churchman that he would swallow it if he could. The result is that, for the reader, the wish has blunted the edge of the thought.

But the impression one carries away from the work is not of these defects, which may be no more than misunderstandings, but of a masterly argument by a peculiarly rich and penetrating mind. Further, the writing is itself a work of art. Taylor has the gift of the natural writer for making the emphasis of thought and rhythm coincide; and he combines this with a power of epigrammatic statement which makes the reading a continual literary pleasure. The range of scholarly reference and apt quotation is immense. The only error I noted was one in which he ascribes, tentatively indeed, a remark to Bradley which is in fact from the third paragraph of Emerson's *Compensation* (Vol. I, p. 288). One notes rather sadly that the reference to things American is almost invariably tinged with contempt. Of course this is common enough in European scholars; it is almost *de riguer* among some of them to use "American" as meaning "Philistine or worse." But Professor Taylor's comments on the remark of William James that the democratic American takes a certain satisfaction in seeing his President discharge his public duties in a badly fitting morning coat show, to my mind, such an inability to enter into what is best in the democratic way of feeling as to suggest that the shortcomings are not wholly ours. And there is one sentence, in apparent allusion to America, about the mass of the people being "contented to see in political life, or in the administration of justice, only a set of artifices by which professional rogues compass their personal ends" which ought in any later edition to come out. It strikes a discordant note in a work whose tone for the most part is singularly high.

SWARTHMORE COLLEGE. BRAND BLANSHARD.

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*Die Logik der Ästhetik.* FRANZ J. BÖHM. Tübingen: J. C. B. Mohr (Paul Siebeck). 1930. Pp. 97.

This clear and compact discussion of the peculiar problem and point of view of esthetics as a philosophical discipline is the work of a member of the Kantian school of Heinrich Rickert. The relation to this tradition is emphasized throughout the little volume.

The argument of the book is briefly as follows: esthetics is theoretical; art a-theoretical. The values of the two enterprises are thus distinct and their relationship creates a problem for reflection. The solution in general is this: art creates empirical values and is absolute authority in its own realm; esthetics represents another type of absolute authority, that of reason. It is a branch of that pan-archic philosophy which makes an intellectual map of the world of values which other functions, including the art-impulse, create.

But how can theory comprehend its opposite, the a-theoretical? The answer is that the a-theoretical of art is predestined for intellectual organization; it is "form-ready and form-needy." The shapes of unreflecting beauty are anticipations of their own intellectual recognition in philosophy. They embody a yearning toward their own pattern of self-consciousness, as Kant's forms of intuition possessed a secret affinity for the forms of the understanding.

The leading conceptions by means of which esthetics organizes the material presented to it by art are three: the esthetic object, value, and categories. The meaning of the esthetic object may be discovered by following the successive stages by means of which an object of art is understood and adequately appreciated. After the first vague reaction there are the various levels of understanding in art-history and art-criticism which culminate in a definition of an artistic "style." But "style" is an empirical concept and not yet esthetic. The esthetic object is the postulate of all styles: beauty. Beauty is the unconditioned and universal element which is not derived from abstraction of the concrete situation, but which is the new contribution to the situation by the pure intelligence. The second esthetic concept is that of worth. The exposition of this concept requires a résumé of the rise of a theory of values in philosophy. Moral values were isolated early, but it remained for Kant to prepare the way for a universalization of values in his Copernican revolution. The truth that all that is, is required or commanded by mind, is another form of the truth that all reality embodies worth. But theory which asserts esthetic values respects the different type of values which the unreflecting art-consciousness affirms. "Artistic value raised to theoretical objectivity yields esthetic value" (p. 72). What philosophy contributes to art, in other words, is simply the moment of enlightenment, a tongue wherewith to express itself, a

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sense of its place in the total scheme of the intellectual cosmos. The third concept, that of the esthetic categories, a much more complex affair, is not dealt with at any length. But the point is made that in the world of esthetics, categories are not "constitutive," but "predicative" only. Philosophy recognizes and affirms the multi-dimensional attributes and characters produced in the empirical realm of art.

Much praise is due this work for the sureness and clearness with which the distinctive office of the philosophy of beauty is stated. That the values of reason can not be derived from progressive elaborations of or abstractions from non-reasoning experience needs restatement and is here forcefully affirmed. Further, the truth that it is of the very nature of reason in creating its own substance and forms to organize its own opposite is here better stated than I have seen it elsewhere. The one defect seems to me that in the strenuousness of the assertion of the distinct rational moment, a too mechanical notion of the relation of the various aspects of the esthetic experience to each other is sometimes used. One feels at times a myth-making in process, the description not so much of a temporary isolated aspect of the esthetic situation as the conjuring up of an entity which can do work by itself.

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## JOURNALS AND NEW BOOKS

ERKENNTNIS. Band 2, Heft 4. Zur Kritik der wissenschaftlichen Grundbegriffe: *Hans Cornelius.* Uberwindung der Metaphysik: durch logische Analyse der Sprache: *Rudolph Carnap.* Two-Valued Logic—Another Approach: *Paul Weiss.* Bemerkungen zum Grundlagenstreit in Logik und Mathematik: *Felix Kaufmann.* Beziehungen zwischen Inhalt und Umfang von Begriffen: *Franz Graf Hoensbroech.*

Lindemann, F. A.: The Physical Significance of the Quantum Theory. New York: Oxford University Press. Oxford: At the Clarendon Press. 1932. vi + 148 pp. $2.50.

Lubienski, Z.: Die Grundlagen des ethisch-politischen Systems von Hobbes. Mit Kurzen Literaturüberblick. München: Ernst Reinhardt. 1932. 303 s. 12 M.

Marcus, Ernst: Das Rätsel der Sittlichkeit und seine Losung. Mit Besonderer Berücksichtigung des Sexualproblems (Sogenannte Revolution der Jugend) München: Ernst Reinhardt. 1932. 232 s. 8.50 M.

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lations from the Original Text. New York: E. P. Dutton & Co. 1932. 239 pp. $2.00.

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Tayler, Henry Osborn: Fact, The Romance of Mind. New York: Macmillan Co. 1932. ix + 166 pp.

Zocher, Rudolf: Husserls Phänomenologie und Schuppes Logik. Ein Beitrag zur Kritik des intuitionistischen Ontologismus in der Immanenzidee. München: Ernst Reinhardt. 1932. 280 s. 12 M.

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## NOTES AND NEWS

From the firm of Gius. Laterza & Figli, Bari, comes an Italian translation of John Dewey's *Reconstruction in Philosophy* by Guido de Ruggiero. It contains an introduction by the translator which is really a critical exposition of Dewey's philosophy as a whole. The same essay is also published in the periodical *La Critica*, for September 20, 1931. Professor de Ruggiero's translation is admirable and his introductory exposition is one of the most judicious and accurate outlines of Dewey's thought to appear in any language. Though the author does not impose his own views on the reader, it is evident that he finds the general aims and methods of Dewey's philosophy congenial to his own "activistic" idealism. In the final paragraph he suggests his chief objections to experimental naturalism as follows: "It is evident that these metaphysical, ethical, and educational developments in Dewey's doctrine far surpass his initial pragmatic and instrumentalist premises. Even his exaltation of the method of the natural sciences, as given in *Reconstruction*, it seems, must be modified. For though it is necessary to experiment and not to lose contact with actual facts, in the sciences of mind as well as in those of nature, experiment here has an entirely different value. The world of nature is a world to conquer; the world of the spirit is a world to liberate and only by means of a free unfettering of activities, forms, and structures can it realize itself. Dewey has come to an ever clearer recognition of this idealistic need for freedom; but he has not as yet completed his revision of his original methodological premises."

H. W. S.

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Book Reviews. Journals and New Books. Notes and News.

**Volume XXVIII. No. 26. December 17, 1931.**

Biological Relativity. OLIVER L. REISER.

On the Meaning of a Proposition. A. USHENKO.

Book Reviews. Journals and New Books. Notes and News. Index for Volume XXVIII.

**Volume XXIX. No. 1. January 7, 1932.**

Reason and Nature: The Metaphysics of Scientific Method. SIDNEY HOOK.

Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 2. January 21, 1932.**

A Study of a Philosophy of the Determinate. I. ABRAHAM EDEL.

Animism and Materialism in Whitehead's Organic Philosophy. ALBERT M. DUNHAM.

Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 3. February 4, 1932.**

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Taking the Causal Theory of Perception Seriously. VIRGIL C. ALDRICH.

Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 4. February 18, 1932.**

A Study of a Philosophy of the Determinate. III. ABRAHAM EDEL.

Report of the Thirty-first Annual Meeting of the Eastern Division of the American Philosophical Association. RUDOLPH KAGEY.

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THE JOURNAL OF PHILOSOPHY

# UNIFORMITY AND INDUCTION

THE principle of uniformity, although sometimes dismissed as irrelevant to science,[1] is more usually asserted to be the basis not only of scientific but of all induction.[2] The principle is assumed to be simple and straightforward, which I think it is. But few have adequately noticed the unsatisfactoriness of accepted statements of the principle,[3] and fewer have made plain the very great difficulty in attaining a satisfactory statement.[4] The task of attaining such a statement is the first important one to which we must address ourselves, since, without it, any attempt to discuss the relation between uniformity and induction must be fairly futile. Then, as our second important task, this relation itself, at least in its most vexing aspect, will be discussed.

## I

We may be helped to a suitable understanding of uniformity by glancing first at the more orthodox theories, then at the more recent theories put forth to displace or supplement them. The orthodox theories are two in number, and might be called the causal and the mathematical theories of uniformity.

The causal theory was clearly formulated by J. S. Mill. Uniformity, according to Mill, means that "what happens once, will, under a sufficient degree of similarity of circumstances, happen again, and not only again, but as often as the same circumstances recur."[5] Contemporary logicians repeat the essentials of Mill's view. Joseph, for instance, interprets uniformity to mean that "the same thing unaltered on different occasions, or two things of the same nature, should under the same circumstances produce the same effect."[6] Bergson has accepted the general view here, al-

[1] N. Campbell, *What Is Science?*, pp. 61–62.
[2] Joseph, *Introduction to Logic*, p. 443; most current logic textbooks.
[3] Bosanquet, *Logic*, Vol. 2, p. 174ff., is one.
[4] Broad, *Relation Between Induction and Probability* (Part II), *Mind*, N. S., 29, 1920, p. 11ff.
[5] *Logic*, eighth edition, p. 223.
[6] *Op. cit.*, p. 420.



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though he has made it a basis for showing the essential unreality of intellectual discoveries. Bergson says: "Induction rests on the belief that there are causes and effects, and that the same effects follow the same causes." "Induction therefore implies *first* that . . . time does not count."[7]

This causal theory of uniformity, I think it fairly obvious, has serious defects. In the first place, if true so far as it goes, the theory clearly does not go far enough. There are many instances of uniformity which simply are not instances of the same cause, under similar circumstances, producing the same effect. Thus, two specimens of a chemical, say sodium sulfate, may be equal in weight, and uniform in other qualities. Here would be uniformity, yet not a cause-effect, but a substance-quality, uniformity. Again, between two objects, *A* and *B*, and two other objects, *Y* and *Z*, a relation of the same general form may hold, say contiguity. This also would be an instance of uniformity, yet not a causal, but a spatial uniformity. Instances easily might be multiplied, but the point is plain. Cause-effect uniformity is only one of a number, and there are any number of other uniformities which, as they stand, are relations between substances, between qualities, between relations, independent of the category of cause-effect.

In the second place, even within its limited possible field of application (cause-effect), the causal theory is simply not a significant principle of uniformity. Uniformity, if anything significant, is a relation between a genuine diversity. But the causal theory, as set forth, actually applies to no genuine diversity. We raise no question of the theory's abstract truth; the theory, as stated, is abstractly true enough; the same cause, under similar conditions, no doubt should produce the same effect, again and again. We question whether the same cause, just it, and the similar conditions, ever as a fact occur again. The Battle of Waterloo, under the same antecedent and similar coexistential conditions, should no doubt happen again and again; but the antecedent and co-existential conditions of this nineteenth-century battle, just those, seem, as an actual fact, never to happen again. It is no reply to this to say that the causal theory might be emended to avoid this. No doubt it might, but how? Bosanquet has tried his hand at it,[8] and we shall have to consider his view in a moment. In the meantime, the point is that the causal theory, as it stands, certainly does need emendation, since, as it stands, it merely states (in sum) that *A* is always *A*, and fails, so far as experience goes, to state a relationship between a real diversity. In short, it amounts to a true but trifling

[7] *Creative Evolution.* English translation, pp. 214, 216.

[8] *Logic, loc. cit.;* but also and particularly, *Individuality and Value*, chs. 3, 4.

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proposition, and is not a significant statement of uniformity at all.

The second orthodox theory of uniformity is the mathematical. This theory is suggested, as the causal also is supposed to be, by exact science. "The business of science," Russell says, "is to find uniformities, such as the laws of motion, and the law of gravitation, to which, so far as our experience extends, there are no exceptions."[9] The view of uniformity commonly associated with such a view of science, is that all the individual processes in nature, without exception, exhibit a routine precisely and completely expressible by mathematical laws—such as the gravitation formula.

This view of uniformity, which is not Russell's but one which scientists prior to recent quantum mechanics seem to have believed, and one alleged to be a main tenet in any thoroughgoing deterministic theory of nature,[10] has also two defects. First, like the causal theory, it is too narrow. There are many instances of uniformity which are not at all precisely or completely expressible by mathematical laws: e.g., the uniformity in odor, taste, etc. of relatively pure specimens of a chemical, say ethylene; the qualitative uniformity between certain strata of rock, and so on.[11]

In the second place, even within the field in which the theory could possibly apply (quantitative aspects of events), there is no proof that the uniformity it asserts is there. The evidence here is two-fold. First, many of the mathematical laws of science are statistical. This means that they are not known to describe precisely the routine of any particular process in nature as such, or any exact uniformity really holding between any two or more such processes. Secondly, the non-statistical mathematical laws of science are also never really known to be obeyed precisely by any natural process. The evidence here is familiar, and has been summed up by various writers, Jevons,[12] Meyerson,[13] and Hobson,[14] among others. Hobson says: "In those advanced scientific theories which are of the quantitative kind, . . . there is always an element of approximation in the application of the theory, because all actual measurement is approximate only. . . . Thus, even in the case of quantitative theory, there is an essential element of approximateness in the power of a scientific theory to represent actual perceptions." Again: "A scientific law states what would happen under ideal conditions, more or less imperfectly realized in actual cases."[15] That is, in actual

[9] *Problems of Philosophy*, p. 100.

[10] Taylor, *Metaphysics*, p. 233ff.

[11] Meyerson, *De l'explication dans les sciences*, chapter entitled "The Irrational," notes various uniformities which fall outside mathematical expression.

[12] *Principles of Science*, chs. 13, 14.

[13] *Identity and Reality*, English translation, p. 31ff.

[14] *Domain of Natural Science*, pp. 40ff.

[15] *Op. cit.*, pp. 40, 44.

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cases, so far as our most exact investigation goes, mathematical uniformity is not really found to be exhibited by the particular processes investigated. The mathematical theory of uniformity, thus, is not only too narrow because failing to have place for many uniformities, but, if taken in all strictness, it is not really an account of any actually known uniformity, since the uniformity it might have been an account of is not actually known to be there.

Attempts have been made recently to avoid some of the difficulties in these two orthodox theories by constructing new interpretations of uniformity. The most notable of these recent attempts undoubtedly are those of Bosanquet,[16] and Whitehead.[17]

Bosanquet first attacks the causal theory, denying that uniformity is a principle of repetition, the same producing the same, the future reproducing the past.[18] In his view, uniformity is simply the principle of rational system, and should be called the principle of relevancy.[19] So understood, uniformity "means that every variation is a member in an intelligible system,"[19] or, more exactly, "the coherence of differences in a whole."[20] This view I think contains a truth, but it has difficulties. By a whole or system, Bosanquet of course means, not a class, but an individual whole, or concrete system; e.g., this table, our planet, the universe. And there is no denying that any two or more realities as equally relevant to and differences in such wholes or systems are, so far forth, uniform. It is easy to see, however, that two such realities, say two specimens of amorphous carbon on our planet, may have uniformities over and above that of relevance to any particular concrete system. For instance, they may be uniform in kind of color, in kind of capacity to combine with other chemicals. In short, they may be uniform as members of a class, the class of amorphous carbon specimens, as well as uniform as members of some concrete individual whole or system. The fact is, relevancy to and coherence in some particular concrete whole, although one uniformity all finite realities have at least as members of the universe, is only one and often the least conspicuous one. That is, relevancy as understood by Bosanquet, is not the principle of uniformity itself, but merely a fundamental illustration of it.

Whitehead, against certain interpretations of relativity, holds that space-time is not "warped" but uniform,[21] thus answering Keynes' question as to whether his (Keynes') theory of uniformity

[16] See footnote 8.

[17] "Uniformity and Contingency," *Aris. Soc. Proc.*, 1922–1923, p. 1ff.

[18] *Individuality and Value*, p. 139.

[19] *Op. cit.*, p. 119.

[20] *Ibid.*, p. 93.

[21] *Principle of Relativity*, preface, p. v.

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is adversely affected by relativity physics.[22] Yet Whitehead recognizes that mere spatio-temporal irrelevance or uniformity (Keynes' theory) is not sufficient. "The space-time continuum is not the sole basis of uniformity in nature. If it were so, induction would be impossible."[23] What further is needed, it seems, is the existence of perceptual objects as controls. A perceptual object, a stone, a star, being a true Aristotelian adjective, in Whitehead's view, marks "a breakdown of the reign of relativity; it is just an adjective of the event which it qualifies. . . . A control is necessarily the control of the process, or transition, in finite events. It thus means, in its essential character, a control of the future from the basis of the present."[24] The doctrine here seems to be the assertion that a perceptual object, say this stone, retains a uniform character amid the events which is its career; its present character hence can be taken to lay down its future character, since, so long as the thing is that thing, it *will be* in some sense the thing it *is*. This is perhaps true. The existence of adjectives in nature into which time does not bite at all ("eternal," "Aristotelian") may be doubted; the equating of stars and stones with such adjectives or indeed with adjectives of any sort may be doubted still more. Yet it seems true to say that a star or a stone, so long in the future as it is that star or that stone, will be uniform in some sense with what each is; that is, the future of each seems to be in some sense settled by its present.

Still this, together with the uniformity of space-time, seems a quite inadequate statement of a general uniformity principle. To go no further: events themselves, no less than space-time and perduring objects, as the causal and mathematical theories at least tried to point out, do appear to exhibit some uniformity. The Whiteheadean account appears to limit any uniformity between events to uniformity of space-time and of adjective (more precisely, of perduring object) and to interpret events as otherwise singular and ununiform. As against this, it seems obvious that events themselves, the transitions or on-goings not their space-time or their adjective, are uniform at least in being transitions, and, if not in possessing causal efficacy or a measurable routine, then also in being the singular elements in nature that pass.

## II

We must try now to formulate, as best we can, a statement of the uniformity principle which is adequate. The above criticisms

[22] The question is asked on p. 248, note 2, *Treatise on Probability*. Keynes' theory of uniformity, stated on page 226 of the same work, is "irrelevance of mere position in time and space to generalisations which have no reference to particular positions in time and space."

[23] *Uniformity and Contingency*, p. 12.

[24] *Ibid.*, p. 17.

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of inadequate theories, it will be seen, immensely lighten this difficult task, not only by removing inadequate views, but by pointing out incidentally the major varieties of uniformity which it is incumbent upon any adequate theory of uniformity to do justice to.

We may begin by observing that uniformity as significant is a relation between a genuine diversity. No doubt one may say that *A* as *A* is uniform with *A*; but this is trifling. If uniformity is to be significant, and where it is significant, a genuine diversity must be involved. Yet uniformity would not exist were there mere unlimited diversity or variety.[25] Something more is needed. This something more, for lack of a better term, I shall call identity, and shall accordingly formulate the uniformity principle as the principle of identity between a diversity.

This statement in itself tells little or nothing, and requires explanation.

The identity it refers to may be of three sorts. The first is literal, contentual identity. This is best illustrated by the identity existing between two temporally close states of an ordinary thing, a stone, an organism, a star. The content of any state of such a thing, say the substance-qualities-relations of this stone now, is empirically known to be to some extent literally identical with, though also to some extent different from, the content of any temporally close state of that thing, say the substance-qualities-relations of the stone a moment ago. In possessing such identity, these diverse states are uniform, and the uniformity they exhibit, literal contentual identity amid diversity, is the first kind of uniformity we may take note of. This uniformity seems to be the sort which Whitehead wished chiefly to insist upon as exhibited throughout nature. We shall call it for a label, uniformity kind number one.

Identity, however, may not be literal. Two other kinds may be distinguished. The first involves a diversity consisting of the differences within an individual or concrete whole. These differences are contents specifically different, but they equally possess relevancy to and coherence in their particular concrete system or whole. And in this consists their identity, or uniformity. This kind of uniformity is illustrated by the parts, elements, members of any articulated individual system, from the system which is the table I write on to the system which is the universe as a whole. These parts, elements, members, each specifically different, are uniform in exhibiting relevancy to, and submission under the law of, the particular whole or system to which they belong. This identity amid the diverse contents of concrete wholes, appears to be the type of uniformity advocated, or at least suggested, by Bosanquet. For convenience, we will call it, uniformity kind number two.

[25] *Cf.* Keynes, *op. cit.*

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Finally, there is a third kind of identity. This involves a diversity which consists, not of parts, elements, members in a particular concrete whole, but of different particular concrete wholes. These wholes (e.g., the many diverse specimens of amorphous carbon), merely taken together, do not make up one systematic individual, but they do make up a class of individuals. Their identity consists of possession of some contents which, although not literally the same, are *in kind* identical.

This uniformity, which we will call kind number three, is of all the most familiar. It is the kind of uniformity which the causal and the mathematical theories were devised to do some justice to, and has abundant illustrations. For instance, two causes, two effects, two causal sequences, which, though their contents are not literally the same, have contents of the same kind, illustrate it; e.g., two causes of the kind called "shooting," two effects of the kind called "death," and so on. Again, two sequences of events known to obey approximately, or in the long run, a given mathematical law; two specimens of a chemical, say sodium sulfate, equal in weight and uniform in other qualities; two objects, $A$ and $B$, related to each other as two other objects, $Y$ and $Z$, say by contiguity; two distant regions of space-time; and so on, are other illustrations. In all of these cases, there is a diversity of concrete individuals (whether events, sequences, substances, relations, space-times) which merely put together do not make one individual, but do make a class or a part of a class of particular individuals. And the uniformity amid this diversity consists of the possession by each of these individuals of a content which, though not literally and in particular the same, is the same in kind or class.

This outlines the view of uniformity here advocated. Perhaps it can be clarified a bit by briefly pointing out its relations to the theories of uniformity previously examined.

A covering formula, identity between genuine diversity, supplants the separate formulae of the other theories. The chief element in Whitehead's views, modified so as to avoid the $A$ is $A$ form which lurks in his view of "eternal" adjectives, then becomes the first illustration of the theory, and the uniformity insisted on by Bosanquet, suitably re-stated, becomes the second. The mathematical theory is emended so that the uniformity pointed to by it is said not to be exact but approximate, or statistical, uniformity. The causal theory is emended so that it is not the claim that the same cause produces the same effect, but that two different causes belonging to the same kind of cause produce two different effects belonging to the same kind of effect. The mathematical and causal uniformities, thus restated, becomes two of a large number of uni-

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formities which constitute illustrations of the third kind of identity, under our theory.

I think that there can be little doubt that the uniformities described by our theory are real. Our theory is indeed merely an attempt to state precisely, in terms of identity, the uniformities recognized by the other four theories and the uniformities we pointed out to be exceptions to these theories. That is, our theory is no more than an attempt to make a precise rendition of at least all the generally recognized facts. Nor do I think difficulty is offered by the question as to whether our account of uniformity has place for all the uniformities that are real. So far as I know, all real significant uniformities have place in our theory as above set down; but if there are uniformities which do not, there seems no reason to believe that they can not be described in terms of an identity theory.

There remains then the question of the relation between uniformity and induction. This, it will be recalled, is our second main topic. Before it can be taken up, however, a few remarks must be made about induction.

## III

Of all the kinds of induction, it will be sufficient for our purpose to distinguish two, for these two kinds, it will be seen, involve all the main problems in the relation between uniformity and induction.

The first kind of induction is concerned with a particular whole, say a particular organism, which is diseased. The induction proceeds from a survey of scattered data in this whole to the adoption of one of several possible ideas regarding it. For instance, in the case supposed, the induction proceeds from a survey of the diverse symptoms in the organism to the conclusion that of all the possibilities this particular organism has the disease $Z$. The notable characteristics of this sort of induction, for our purposes, are two: that it is concerned with one particular individual, and that its result refers to and is affirmed of merely this one individual.

The second sort of induction begins as does the first; initially, it is an analysis of a particular individual, or perhaps several, say three specimens of ethylene. In its conclusion, however, it differs. It asserts here an idea which claims to be true not merely of the individual or several analyzed, but of all the individuals belonging to the same class as the individuals analyzed. Its conclusion says: ethylene is $xy$, meaning that all specimens of ethylene, under the stated conditions, are $xy$. That is, the outcome of this sort of induction is an intentional generalization, unlike the outcome of the first sort, which is intentionally an assertion merely about one particular individual.

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The first sort of induction is best illustrated by inductive reasoning in everyday experience, in the practice of the arts, in historical research, and in quasi-historical sciences, such as geology. The second sort is best illustrated by the inductive reasoning in those sciences, which, like physics and chemistry, seek universal laws, or formulae equally applicable to any possible specimen of a type: any gravitational transaction, any magnetic field, any interaction between chemical *A* and chemical *B*.

The first sort of induction, it seems to be tacitly agreed, raises no special theoretical problems relative to uniformity. Yet a word or two on it must be said. This sort of induction does presuppose uniformity: namely, that the data apprehended and used in the induction are relevant to the particular whole investigated—uniformity kind number two. Moreover, this sort of induction is conditioned by the reality of this type of uniformity. That is, an idea projected by this sort of induction is valid and said to be valid only if it is adequate to all the data and just those data relevant to the particular system investigated. Thus, relevancy on the part of the diverse data to one particular whole, is assumed in, and conditions, the determination of the validity of the outcome of this sort of induction. This fact has usually been ignored, but perhaps rightly. After all, the continued analytic inspection of the situation itself, not the mere presence of uniformity in it, actually determines what idea is or is not valid, and uniformity, far from solving the problem involved in this sort of induction, serves mainly to set it by posing the difficulty of determining in the investigated situation what is or is not relevant for any proper solution.

The second sort of induction, however, has a difficulty which the uniformity principle itself has often been supposed to be able to solve. The difficulty is familiar. In this sort of induction, only a few of a large number of known or possible cases are selected for analysis, and the result obtained is known to be strictly true only of these few selected particulars. Yet the outcome of this induction is expressed in a generalization claiming to be true not only of the analyzed but of all cases. How is this justified? The answer has been: there is uniformity between the analyzed and the unanalyzed cases, and this uniformity justifies the extension to all cases of what has been found to be true in the few. Once true, always true, thanks to uniformity. The uniformity referred to here, of course, is kind number three.

Now the uniformity here supposed, I think, is real enough. Between the analyzed and the other known or possible cases of *P*, there is and must be some identity in kind of content. For after all *P* is nothing but a symbol for the class of all cases of a kind, and, if

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any particular is to be a case of $P$, it must therefore exhibit some identity of kind with any other case of $P$. Still the mere existence of *some* identity in kind between all cases of $P$ surely is not enough to guarantee that *any* specific identity found between a few analyzed cases necessarily holds for all cases; i.e. that the generalization, $P$ is $xy$, if true of $A$, $B$, $C$, is true universally. For it may be that the specific identity discovered between the few cases, whilst real enough for the few, is real only for the few and accidental for all. And certainly there is nothing in the mere fact of *some* uniformity in kind existing between all, which in itself guarantees that *any* specific uniformity found between the few is not accidental, but necessarily true.

The situation here is similar to the situation in regard to the first sort of induction. There, uniformity underlies and conditions assertion, as here it underlies and conditions generalization. But in the first sort of induction uniformity does not guarantee the truth of any idea asserted; this is guaranteed by continued inspection. Likewise here, uniformity can not guarantee the truth of any generalization from few to all. Any such generalization may happen to be grounded on contents which, identical for the few, are accidental for all, and the mere existence of *some* contents identical in kind for all, uniformity, can not in itself preclude that the generalization may not be.

Still two points of the utmost importance must be added and discussed to set this in its proper light.

(1) There is a type of second order induction that issues in an outcome which to all appearance has certainty, namely, inductions which discover defining contents. Suppose, for instance, the few cases analyzed are those of a chemical substance, $P$. These few cases are found upon analysis to have $x$ and $y$, and when $x$ and $y$ are put together you have a case of $P$, and when $x$ or $y$ or $xy$ are withdrawn, a case is no longer a case of $P$. Such analysis appears to justify the belief that $xy$ are defining contents, namely, contents which earmark any case as a case of $P$, as hydrogen and oxygen do water. The generalization, all $P$ is $xy$, is, then, not felt to be merely probable, but certain, although like all generalizations issuing from second order induction, it is a generalization from few to all, and based on an analysis of only some of the total cases of $P$. Let us suppose all this to be true. Is the certainty of the generalization here, so far as it is here, a result of uniformity? I think it is easy to see that it is not. That all $P$ is $xy$, is certain, if at all, not because all cases of $P$ have a uniformity, which is true enough, but because the analysis of the few cases shows that just $xy$ is this uniformity, that, if $xy$ were present the case would be a case of $P$, and if $xy$ or $x$

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or $y$ were absent, a case would not be. The analysis lets us see that a case can not fall under $P$ unless it exhibits $xy$, hence that all $P$ is $xy$; whilst the mere uniformity between all cases of $P$, though it be real, in itself merely shows that *some* identity in kind of content, but not necessarily $xy$, is true universally.

(2) There is a variety of uniformity which, if fundamental, would contravene our entire position here. If uniformity were complete repetition, if any case of $P$ as uniform was simply and completely any other case all over again; then, an outcome of analysis, true for one or several cases, even if it did not define the class, would be guaranteed by uniformity itself to be true universally. Once true, always true, if uniformity were complete repetition. We have seen reason to reject this version of uniformity as fundamental. Such uniformity holds between $A$ and $A$, but there are endless uniformities empirically discoverable which are not relations between $A$ and $A$, but between a genuine variety. We need not recite again the list already given in sections one and two above, and sufficient to establish our criticism here. But we may point out that with the acceptance of uniformity as between a genuine variety, the position possible under complete repetition, entirely falls away. In itself complete repetition would indeed guarantee the *general* truth of the result of any second-order induction. That is, if $xy$ were true for a case $A$, and if all cases of $P$ as uniform were merely $A$ all over again, then, thanks to uniformity, $P$ could be said always to be $xy$. Universal truth would be assured beforehand by uniformity. Under genuine variety, however, this can not be. For then all that is true in one case simply can not be true in every case, and anything true in several cases may not be true in all. The reason is that genuine variety implies in each case of $P$ some contents that are not universal but peculiar. Otherwise, $A$ and $B$ and $C$ would not be genuinely diverse. And this being so, under genuine variety, what is found in one case or in several may be a content that is not universal but peculiar to the one or several, and any discovery based on one case or several uniform with all therefore can not, simply because the one or several cases have *some* uniformity with all, be said to be true for all, or universally.

## IV

Up to this point, we have discussed the relation between induction and uniformity kinds numbers two and three. Kind number one, I think, raises no special points. This uniformity, it will be recalled, asserts that a thing at $t$ has some literal identity of content amid diversity with that thing at $t'$, e.g., a temporally close state of the thing. The problem in regard to induction here is in principle, if not in details, the same as the problem involved in the relation

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between uniformity kind number three and induction of the second sort.

The uniformity principle here does not itself lay down specifically the identical content between the two temporally close states of the thing. It merely lays down that so long as the thing is that thing any two temporally close states of it will have *some* literal contentual identity. What this identity is, it is the business of inductive investigation, where mere observation fails, to determine, if it can. Now, the inductive analysis here may detect the essentials of the thing as that thing (the defining contents), in which case the induction is enabled to assert the character if not the characteristic behavior of the thing at any nearby time of its existence with certainty. This certainty, however, if real, would be clearly a function of the analysis performed, not of the mere fact that between the thing when analyzed and the thing at a nearby time of its existence some literal contentual identity existed. Moreover, if this analysis failed, if it were impossible to determine the essential contents of the thing as that thing, then, though uniformity between the two states of the thing would still remain in full force, decisive certainty could not be attached to the inductive result, but only probability.

The situation here, as we have said, clearly is in principle the relation between induction and uniformity kind number three all over again. An assertion based on what is present (here, the present state of a thing; there, a few cases of $P$) is carried beyond the present to the absent (here, another state of the thing; there, all other cases of $P$). And between the present and the absent some uniformity is known to be real. This uniformity does not guarantee truth or certainty to the assertion carried beyond the present. For though this uniformity is real, it exists amid genuine diversity, and genuine diversity by implying something peculiar to the present and unshared by the absent implies that any assertion based on the present may be the assertion of a content peculiar to the present. And the mere existence of a content that is not peculiar but is in some sense identical in the absent and the present (i.e., uniformity), in no way predetermines by itself that this will not be.

Such, then, is the relation between uniformity and induction, at least in its most vexing aspect. Uniformity itself, whilst real enough and conditioning induction, does not guarantee certainty to it. Certainty is got and guaranteed by investigation, hard work; uniformity itself merely makes clear that some certainty is there to be attained, and that, until investigation has been carried far enough, any idea proposed has only probability.

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## FICHTE'S CONCEPTION OF A LEAGUE OF NATIONS

IN connection with Fichte's views on peace and war interest has centered about his relation to the national uprising against Napoleon, as this culminated in his celebrated *Reden an die deutsche Nation,* 1807–1808, and the lecture *Ueber den Begriff des wahrhaften Krieges* from the *Staatslehre* of 1813. This tendency has been reinforced by the continued influence of Fichte's political thought on the national consciousness of the German people—he was foremost, for instance, in the creation of the belief in the supremacy of German culture—and by the events of recent history. In 1913 his patriotic example was invoked once more as new sacrifices were demanded for the completion of the nation's armament in view of the expected European conflict. During the World War the *Wahrhafter Krieg* was one of the national classics republished in pocket editions for the use of the soldiers in the field. Amid the distress of the years since the peace, inspiration—not always happy—has been derived from his teachings for the work of reconstruction. In this way it has come about that other phases of the Fichtean doctrine concerning war and peace have been neglected or overlooked. So, in particular, his discussions of the question of a *Völkerbund;* which, moreover, form but a small part of his political philosophy as a whole. Here he takes his departure from the work of Kant. The essay *Zum ewigen Frieden* was published by Kant in 1795. In the following year Fichte published a review of it, in which, according to his ardent habit, he praised the Kantian views in glowing terms, while he interpreted certain points in the light of his own conclusions.[1] The *Grundlage des Naturrechts,* 1796–1797, in its Second Appendix brought a more formal consideration of such a *Bund* in relation to the elements of international and cosmopolitan law. The theory was repeated with certain variations in the last year but one of the philosopher's life at the close of the lectures on *Rechtslehre,* 1812.[2] Finally, the lectures of 1813—which were called at their posthumous publication *Die Staatslehre, oder über das Verhältniss des Urstaats zum Vernunftreiche*—after developing in an almost mystical way positions advanced by Fichte in earlier writings, foretold the forma-

[1] Fichte's *Sämmtliche Werke,* VIII, pp. 427–436.

[2] The *Rechtslehre* of 1812 was published by Fichte's son in 1834. It was then entitled *Das System der Rechtslehre* and the editor noted on the title-page that he had incorporated in the text passages from the earlier *Grundlage des Naturrechts* as referred to by the author. The editing of the lecture notes for the press seems, however, to have gone considerably beyond this. *Cf. Johann Gottlob Fichte: Rechtslehre vorgetragen von Ostern bis Michaelis, 1812. Nach der Handschrift herausgegeben von* Hans Schulz, 1920.

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tion of *einen einzigen innig verbündeten Christlichen Staat* to embrace all mankind throughout the earth.[3]

Fichte held that the relations of states are grounded in the relations of their nationals. For the state in itself is an abstract concept and the citizens alone are actual persons.[4] Two citizens of neighboring states come into touch through their affairs. And each seeks a guaranty for the security of his property and his person like that which he enjoys within the boundaries of his home community. But how is such a guaranty to be provided? Neither party can of right demand that the other submit to the jurisdiction of his own government; and there is no common authority to act as judge between them. In this situation the two states must undertake a mutual judgeship, as it were, with a pledge from each to punish and redress injustice on the part of one of its citizens toward a citizen of the other as though it had been done to a fellow-countryman. This agreement implies the mutual recognition of the legal organization and independence of states, in so far as such a constitution is necessary to fit them for international relations under law. And, in the second place, it requires completion by a more particular enactment, a treaty between the states specifying the rights which are reciprocally guaranteed to their citizens. Either the refusal of recognition or a violation of the treaty gives just ground for war. In Fichte's view, every people living not in the state of nature, but under a government, no matter what this may be,[5] has the right to compel recognition from neighbor states. Any failure to carry out the provisions of the treaty is a violation of the contract by which positive international rights have been created. In either case, the offended state has a valid right to war (*ein gültiges Recht zum Kriege*).[6]

With his customary *a priori* absolutism, moreover, Fichte conceived such a conflict as a *Vernichtungskrieg*. The right to war, like all rights of compulsion, is unlimited. And the offending state has forfeited its international legal status. "All positive rights are

[3] *Cf.* W. Moog, *Fichte über den Krieg*, pp. 32–33, 48. It should be noted that this consummation will involve a transformation of the political and social system. Compulsion will cease; the state itself as a compulsive institution (*Zwangsanstalt*) will be dissolved. The principle of the new order will be love or good-will, proceeding from rational insight into the nature of God, man, and society, as these are revealed by the *Wissenschaftslehre* in the spirit of Christianity. *Staatslehre, S. W.* IV, pp. 592–600. Fichte's discussions of a league of nations proper, as they are considered in this paper, are relative to the present order.

[4] *Grundlage des Naturrechts, S. W.* III, p. 371.

[5] *Jedes Volk, das . . . eine Obrigkeit hat, sie sei beschaffen wie sie wolle. . . .*

[6] *Grundlage des Naturrechts*, pp. 372, 376. *System der Rechtslehre, S. W.* X, pp. 639–640, 642.

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grounded in a contract": as between states an actual contract, the definite international agreement. Now, recognition has been denied or the treaty has been broken. In both cases the offender has shown that a legal relation with it is impossible; hence that it has itself no rights. Through its own acts it has become *rechtlos.* Even if it sue for peace and promise amendment, what guaranty can it furnish that the offer is more than a temporary expedient? For Fichte it follows that in the nature of the case it should be destroyed by its opponent and its citizens incorporated by the latter with its own.[7]

But here as elsewhere right and might do not always go together. If the execution of international justice is left to the offended single state, it is possible that victory may rest with the delinquent. There is therefore need for a combination of several states to attack the latter and force it to submission. Such a combination would be a *Völkerbund* and not a *Völkerstaat;* since the right subsists to constrain a state to maintain some legal relations with its neighbors (i.e., the relations of recognition and treaty as above), but not the right to constrain it to join the League. The positive protection of this is only to be gained as a result of voluntary membership.[8] The determination of the delinquency of a state is a matter for the judgment of the *Bund.* The question of recognition can be readily decided: it depends on the fact whether the state accused has entered into the contractual relation with its fellow or the reverse. It is more difficult to judge concerning the fulfilment of the treaty. Two factors are here involved: the reality of the facts alleged and their relation to the exact wording of the treaty. To facilitate the establishment of the facts, all states should practice publicity in their affairs. In order that the terms of the treaty may be clear and definite, it is subject to the oversight of the League: all treaties among the confederated states are concluded under its guaranty, therefore it can tolerate no indefiniteness.[9] Finally, when the *Bund* has rendered judgment, it must be carried out. This is to be accomplished by a war of destruction against the convicted state. But as such cases, it may be hoped, will be few, and later will entirely cease, it was Fichte's opinion that a standing federal army would not be necessary. An *Executionsarmee* made up of contingents from the member states as occasion occurs will meet the need.[10]

[7] *Grundlage des Naturrechts,* pp. 376–377, 379; *System der Rechtslehre,* p. 642.

[8] *Grundlage des Naturrechts,* pp. 379–380. Fichte's position here contrasts with that adopted in his review of Kant's *Zum ewigen Frieden,* in which he looks on the *Völkerbund* as merely an intermediate stage on the way to a *Völkerstaat, S. W.* VIII, p. 433.

[9] *Grundlage des Naturrechts,* pp. 380–381.

[10] *Ibid.,* p. 381.

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Fichte thus outlined in brief a comprehensive scheme for an international league to enforce peace. The plan is not complete, for certain questions are left without consideration, but the outlines are clearly drawn. In this respect it is superior to the Kantian discussions of the same theme; and there is also less of variation in the Fichtean analysis than in Kant's celebrated theory.[11] Variation, however, not to say vacillation, does occur. Reference has already been made to the contrast between the demand which is made in the review of Kant's *Perpetual Peace* for the eventual formation of a *Völkerstaat* and the conclusion adopted in the *Grundlage des Naturrechts* that the league is not to constitute a unified state, but a federation of independent states.[12] And there is still greater divergence among the several accounts of the establishment of the *Bund*, as well as of the results which may be expected from it and, in general, from the action of the underlying forces which make for lasting peace. The review of Kant concludes with an optimistic view of the distant future. Toward the close of the *Grundlage des Naturrechts* it is categorically asserted: "As this federation spreads further and gradually embraces the whole earth, *perpetual peace* begins, the only lawful relation among states. . . ." In the *System der Rechtslehre*, however, this hope is dimmed by consideration of the self-seeking propensities of men and nations. The danger of unjust decisions in international causes is rated greater than before, and the possibility is noted of the oppression of the weaker states by the more powerful members of the *Bund*. The forecast now changes to the subjunctive mood, and the way to the establishment of a league, with power to enforce law as between the nations, is even characterized as *eine unauflösliche Aufgabe an die göttliche Weltregierung*. Meanwhile, the principle of force must prevail: *Bis dahin aber ist die Regel: jeder Staat hüte sich, und wehre sich bis auf den letzten Blutstropfen*. . . . Finally, the *Staatslehre* looks forward to the union of the Christian nations and the incorporation with them of the non-Christian peoples after their subjugation.[13]

[11] *Cf.* the writer's "Kant's Philosophy of Peace and War," this JOURNAL, Vol. XXVIII, pp. 197–204.

[12] *Cf.* n. 8 above.

[13] *S. W.* VIII, pp. 427–428, pp. 433–436; *Grundlage des Naturrechts*, p. 382; *System der Rechtslehre*, p. 645, 649; *Staatslehre*, pp. 599–600. F. Medicus (*J. G. Fichte als Anhänger und Kritiker des Völkerbundgedankens*, Zeitschrift für Völkerrecht, XI, 1920, pp. 141–154) maintains that the close of the discussion in the *System der Rechtslehre* amounts to an abandonment of the idea of a League. His argument is striking but overdrawn, and the conclusion not beyond question. In *Ueber Macchiavelli* (*S. W.* XI, pp. 422–428) Fichte had argued still more trenchantly that war is the necessary relation of states, since *zwischen ihnen niemals . . . gewisses und ausgemachtes Recht Statt finden kann* and there can be no common judge; further, that perpetual peace is a dream of

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Fichte's conception of the *Völkerbund* is then more settled than, toward the last, his confidence in its realization. In his constructive view he had in mind a league rather than a world-state. And, as already intimated, the nature and functions of the League were clearly summarized, so clearly that they can readily be compared with recent institutions designed for the establishment and the maintenance of peace. Fichte's league was to be compactly organized. It was conceived as an international federation exercising authority in both the judicial and the executive spheres of government. Its powers included coercion and destruction. The contrast is sharp with recent endeavors to assure peace by simple agreement. The *Bund* was not to be a mere pact or covenant; it was proposed as a combination of states destined in its spread to include all nations and endowed, within its field, with supreme power. And it was planned to function in a positive rather than a negative way. It is true that the scope of the *Völkerbund* was limited by Fichte's point of view: the deduction of the law of nations from the contacts of the citizens alone, the restriction of the content of the law to the articles of particular treaties concluded between the several states. In this respect the present League of Nations covers a much wider field. And, as is evident, it organizes its action far less about the central idea of force. Economic pressure, indeed, is contemplated in the Covenant of the existing League, and even constraint by arms. But during the somewhat more than ten years of its existence these weapons have not been used; while the tendency to non-coercive measures—conference, inquiry, advice, arbitration, judicial reference—has become so strong that it amounts to a constitutional change, although the movement for the revision of the relevant articles of the Covenant has not yet been carried through. One further distinction is obvious: according to the Fichtean idea of a league, there was to be no division of judicial authority with a second international body functioning in its own right. The *Bund* was to be the sole judge in international causes, it was not to share the work with a World Court and its decisions were to be given in its own name.

In conclusion, the point may be emphasized which was suggested at the beginning of this paper: Fichte's theory of a *Völkerbund* formed but a part—probably it should be termed a minor part—of his political philosophy. From the time of the French Revolution through the era of Napoleon up to the War of Liberation he con-

the shallow philosophy of the time. But it must be remembered that this was written amid the throes of the Napoleonic invasion and with pointed reference to the weakness of the national leadership. *Cf.* X. Léon, *Fichte et son Temps*, II, 2, pp. 20–34; Medicus, *Fichtes Leben*, 2 Aufl., 1922, pp. 219–220. A. Messer, *Fichte und Machiavelli*, Kantstudien, XXIV, pp. 116–122.

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cerned himself with the problems in this field. And his inquiries took a wide range. The foundations of human society; the nature and functions of the state; the philosophy of law; the philosophy of history in its application to the questions of the age; idealistic education for national and cosmopolitan renewal; legitimate and illegitimate war; the development of mankind to the consummation of the *Vernunftreich*—these all were discussed in books, in lectures, in addresses with unwearied energy. Moreover, Fichte was caught in the tumult of national and international conflicts as few thinkers who have pondered the questions of peace and war. The contrast with Kant in this respect has been made the subject of remark.[14] But the comparison may be extended beyond his immediate predecessor to thinkers as a class. Twice he was involved in critical campaigns —one disastrous to the nation, the second destined, after he himself had died, to restore the balance of the first. On both occasions he applied for active service, if not as a combatant, yet as a sort of lay-chaplain with the army. And although permission to serve was denied him, his activity in rousing the people to its task became an integral factor in the nation's history. It is not surprising, therefore, that Fichte's discussion of a *Völkerbund* has been overshadowed by his other work—theoretical and practical—in the general field. It deserves to be recalled, however, in connection with similar projects for a federal organization for the promotion of peace.

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## BOOK REVIEWS

*De la connaissance de soi.* Léon Brunschvicg. Paris: Félix Alcan. 1931. Pp. xi + 196.

This series of lectures will probably add but little to their author's reputation as a subtle analyst and brilliant expositor, but they will nevertheless charm most readers by their rhetorical grace. The knowledge of self that they profess to discuss turns out to be a knowledge of the general traits of men, most of which we know anyway.

M. Brunschvicg's point of departure is that the human soul is a centre from which man's various activities radiate, rather than the product of these various activities. To know the human soul, then, is to follow the genesis of its various activities and their development. In doing this one derives a history like Hegel's *Phenomenology* and indeed this study in method, if not in results, is a modern version of that philosophical masterpiece.

[14] E.g., by Moog, *op. cit.*, p. 7.

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Under its wealth of erudition and its elaborate argument lies a very simple formula. The dualism of matter and spirit orients the student of the human soul in two contradictory but, as one might expect, complementary directions. One can look outward towards matter or inward towards spirit, and as man becomes "realistic" or "egocentric," he becomes *homo faber* or *homo religiosus*. Since *"l'humanité, comme tout ce qui existe, est un ensemble de fonctions"* (p. 23f), man as a maker and man as a worshiper must each contribute his part to the nature of man as man. Consequently, since that which is necessary is good—which we need not dispute—it will be part of the technique of the student of humanity to write an apology as well as a description of man's various functions. With this in mind, M. Brunschvicg shrewdly points out that the contempt for *homo faber* by the Platonists to the greater glory of *homo sapiens* was entirely unwarranted. He attributes to it the sterility of Greek mathematics and natural science. It thus turns out in good Hegelian fashion that a human capacity which seems to be contradictory—or better the enemy—of another is really its friend and helpmate. But, again in good Hegelian fashion, this human capacity may be developed exclusively: one may live the life of *homo faber* to the exclusion of any other life. In this case one accepts scientific method for logic, materialistic economics for sociology, pleasure-pain psychology for ethics.

It is but the work of a few pages to point out that the material world—which M. Brunschvicg appears to believe Bacon, the Encyclopedists, Bentham, and Comte meant by "nature"—is in itself largely the work of man. These pages recall how engineers have changed the face of the earth, putting rivers in deserts, and dry land in swamps and seas; how inventions have linked islands to the mainland and changed night into day, have made cold climates warm and warm climates cold. This would seem to show that the formula *natura non parendo nisi vincitur* is false and that man's self-consciousness has arisen not from thinking of himself as part and parcel of the natural order but as superior to it. *"C'est un fait d'expérience générale, remontant sans doute à des milliers et à des milliers de siècles, que l'homme n'a pris entièrement conscience de lui-même tant qu'il ne s'est pas considéré sur un plan supérieur à la nature, tant qu'il n'a pas posé le problème de Dieu et du salut en Dieu"* (p. 40). Thus *homo religiosus* rises up to confront *homo faber*.

It will surprise no one to learn that *homo religiosus* is the very opposite of *homo faber*. Like the forces of repulsion and attraction in the physical world, the forces of fear and hope stabilize the phenomena of the religious world. But what are the phenomena to

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be stabilized? They are the phenomena of the inner life, phenomena which are independent of the natural order and which the believer maintains continue when the natural order has been left behind. This life can not be studied by empirical psychology, yet it finds expression in symbol and myth. It is constantly belabored by Reason, but never crushed.

It owes its survival to the fact that the opposition is more verbal than real. The verbal formulas of opposition serve rhetorical rather than scientific ends. Between *homo faber* and *homo religiosus* stands a third man, *homo magicus*. "*Vue du côté de la religion, la magie est refoulée vers la technique; vu du côté de la technique, elle est renvoyée à la religion*" (p. 61). Thus *homo magicus* is somehow more "fundamental" than either artisan or worshiper. It is in him that one finds a fusion of realism and egocentricity. But such an ego can not be the self which we are seeking. For it, too, is open to the criticisms of Reason. We may, to be sure, refuse to give way to them. We may insist that the intuited ego is above Reason. But that such insistence is called for proves more eloquently than anything else the distinction on the critical level of subjectivity and objectivity. Is there no way of filling the gap between Jean-Jacques Rousseau and Saint Thomas?

The existence of society, art, and science intensifies this problem. How can they exist if man is the solitary dreamer or the smith, or even the magician, trying to sway the course of events? These phenomena could not be at all if there were not numerous individuals, and if there were not communication between them. Man therefore must now be envisaged as *homo loquens*. But *homo loquens* himself has been interpreted in two ways: language to the Cartesian is "*le produit de l'activité spirituelle qui a l'intuition claire et distincte de soi*"; in the *sociologisme* of Bonald, it is "*un 'en soi,' antérieure à la parole, et d'où dériverait la raison elle-même*" (p. 82). After tracing what are sometimes called the "implications" of these two interpretations, M. Brunschvicg points out that in so far as man is revealed in language, he is a political animal, in the Greek sense of "political." But *homo politicus* seems the antithesis of the self, in so far as the self is conceived to be the inner man. Yet are there any of our characteristics which have no social roots? It is a simple matter to reconstruct an individual's inner nature from his social behavior. "*Les gestes les plus familiers de la vie quotidienne, la façon de remettre un ticket à un contrôleur, ne révèlent-ils pas l'être social d'un homme, l'habitude du commandement ou celle de l'obéissance?*" (p. 99). Yet man refuses to belief himself limited to his political essence. The conscientious objectors, of whom the Sophoclean Antigone is the saint, have always been among us, as

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their critics have been. And the polis which is supposed to be that which gives us our being has been defined not only as the City of Cecrops but as the City of Zeus.[1]

We now pass to a new stage of this phenomenology of spirit. Both language and the City are institutions and man must therefore be thought of as a builder of institutions. The institutions he builds resist the wear and tear of time and therefore must find their sustenance, not in the flesh and blood of man the animal, but in the eleatic heaven of truth and beauty (the reasoning is not the reviewer's). Science and art, which are the institutions of *homo artifex* which concern us, are purely gratuitous inventions in so far as biological necessity is concerned. Their detachment from utilitarian ends marks them as of a special realm and both the artist and the scientist have broken with nature.[2] Both artist and scientist impose their formulas upon their subject-matter and illustrate the classical dictum, *homo additus naturae* (p. 147). And yet this too must not be interpreted literally. For we are told contemporary physics shows us that both old-fashioned realism and old-fashioned idealism are being outstripped.

> Il n'y a rien qui soit plus paradoxal pour le sens commun que ce trait caractéristique de la physique mathématique contemporaine: la science de la nature devient de plus en plus objective à mesure que le savant fait explicitement leur place aux conditions proprement humaines de la mesure et de la coordination expérimentale. L'alternative de réalisme et de l'idéalisme, pris tous deux comme des absolus, est dépassée. Le savant connaît d'autant plus exactement son objet qu'il a cessé de se négliger lui-même dans l'oeuvre de connaissance, à la manière des enfants qui oublient de se compter. Il prend conscience des choses à mesure qu'il prend conscience de soi. Le COGITO se révèle à lui-même par l'action de la COGITATIO, contrainte à se déployer et à se renouveler sans cesse pour entrer en connexion plus précise et plus sûre avec des réactions de l'expérience. L'esprit et la nature se démontrent l'une à l'autre leur réalité par leurs résistances réciproques, de telle sorte que, dans l'harmonie de la construction einsteinienne, HUMANISME et OBJECTIVITÉ apparaissent, non seulement réconciliés mais solidaires [p. 149f].

Man, then, finds truth when he takes himself into account. Where is he to find goodness? In the strict obedience to a rule imposed

[1] This type of punning, which of course is common enough in philosophical literature, is one of the most bewildering elements of M. Brunschvicg's thinking.

[2] This is no place to go into the philosophy of art, yet one can not resist pointing out that in discussing the "meaning" of works of art, one must distinguish between the point of view of the artist and that of the spectator. A picture may have no economic or biological importance for its owner, but may be a means of livelihood for its maker. Art was in general a trade up to the romantic period, and no one can say that from the spectators' point of view it was any the worse than art after the romantic period. But M. Brunschvicg here is simply following the tradition of esthetics and should not be too harshly criticized for it.

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dogmatically from without or in realizing the conditions of his own nature? Must each of us follow the commandments of our elders or our social leaders, or must we be "true to ourselves"? How can we answer until we know what we are? Are our selves determined by the world in which we live, or do they order and regulate that world? This opposition, like so many others in M. Brunschvicg's book, must be "reconciled." It is reconciled, as the opposition of science and art was reconciled, by insisting that the apparent antithesis is not real and that the spiritual being is both subject and sovereign. But such a being can not exist in time and space where antitheses are real. It must therefore exist in another realm, and that realm is found in eternity, the land of Plato's ideas and of Spinoza's God. "We," it would seem, are inhabitants of a land behind this land, a land explored by Platonists, Neo-platonists, and post-Kantians, and yet as unfamiliar to us as the farthest star. That man should be estranged from himself is no paradox; psychiatrists have long made clear to us its rationality. And yet that self-knowledge should be a denial of everything that surrounds us, that all our interests and capacities, all our struggles and satisfactions, are not the possessions of our real self seems strangely puzzling. Plotinus solved the problem of why the Eternal Self should be in time by his doctrine of the voluntary descent of the Soul to fulfill the natural law of production. The Christians, I believe, solve it by the story of the Fall. M. Brunschvicg leaves it, as far as this book is concerned, unsolved. And when the last page is reached and man is seen to be essentially "spiritual," man as smith, as priest, as magician, man in all his "lower" stages, becomes the great puzzle. What are these avatars and why?

A book that is written as well as this one commands respect. One feels that it must be important in spite of appearances. But how resist the temptation of asking precisely what one has learned from such a treatise? One has learned that man makes things and thus submits himself to the external world; that man worships gods and thus submits to his hopes and fears; that man mutters charms and stirs magic brows and thus both submits the world to him and himself to the world; that men talk to one another and live in society, and so on. Some of these observations surely have occurred to all of us and all of them to some of us and yet the necessity of putting them into a book has never been urgent.

There is, moreover, a very strange feature of the technique of this reasoning which a reviewer feels compelled to point out. That is that though M. Brunschvicg credits Man with being the centre of craftsmanship and religion and magic and the rest, observation shows us that only some men are each of these things. The blacksmith

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is not the priest, nor is the priest necessarily the magician. Even though the one could not exist without the other—as in Hegel the master can not exist without the slave and *vice versa*—that does not mean that one is the other. So that at best all that M. Brunschvicg has succeeded in doing is arranging human activities in a kind of hierarchy. He has by no means shown that the essence of the highest stage is that of all the stages.

On the whole the fairest criticism of M. Brunschvicg's book is that it is another gallant attempt to justify human aspirations. Most men have enjoyed feeling that they have a special place in the cosmos, that they are added to nature, and to tell them that they are beyond time and space is a way of doing it. To be sure, we all of us have to live as if we were four dimensional biographies in space-time, and though we know we are "eternal" and "spiritual," we are curiously unable to cash in this security when we have to cover long distances or are in need of an operation. But somehow or other the conflict between actual experience and dialectical construction seldom worries us and I dare say most of the readers of M. Brunschvicg will feel as if they knew themselves when they finish his book, whatever his critics may say.

GEORGE BOAS.

THE JOHNS HOPKINS UNIVERSITY.

*Ideas: General Introduction to Pure Phenomenology.* EDMUND HUSSERL. Translated by W. R. Boyce Gibson. (Library of Philosophy.) New York: Macmillan Co. 1931. Pp. 466.

At the end of an article on Husserl in *Mind,* July, 1925, Professor Boyce Gibson of the University of Melbourne said: "Let us hope that some one will have the requisite courage, insight, leisure, and familiarity with the niceties of philosophical speech to translate this great thinker into readable English. It would be something really worth doing."

Six years later it was Professor Gibson himself who published the first of Husserl's works in English (that is, excepting the *Encyclopaedia Britannica* article on phenomenology translated by Professor Salmon of Belfast). If he had not undertaken this task, it is possible that English readers would have had to wait another six years for a translator who could master what Santayana has called Husserl's "thankless text." Husserl's style is such that it calls for a translator of experience, and this Professor Gibson fortunately is, for he has the translation of a number of Eucken's works to his credit.

It may be, however, that his experience has been responsible for some of the less welcome features of the English edition. In the

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first place, the title of the German work is *Ideen zu einer reinen Phänomenologie und phänomenologischen Philosophie.* This has been translated by the one word *Ideas,* the phenomenological aspect being covered in a sub-title which is really the title of the first book only. Despite the fact that the translation has been authorized by Husserl, it seems to me that the liberty taken in this instance is unfortunate, for in another connection Husserl warns against the use of the word "ideas" (p. 46) which philosophically he restricts to the Kantian sense. Further, his "universal idealism" is not idealism in the ordinary sense of the term, for he holds that every form of current philosophical idealism, as of realism, is in principle absurd (cf. pp. 19–22). Possibly then it was Professor Gibson's own idealism that led him to regard Husserl as ultimately an idealist, or his perception of "a trend that is towards idealism" (p. 19; cf. note to p. 441) may have led him to use the dangerous, though in English hard-worked, word "ideas." Probably, however, in realizing the difference between the German and the English outlook, he felt that *Ideas towards a pure phenomenology and a phenomenological philosophy* was a title unsuited to English use. A less experienced translator would not have risked so radical a change in meaning, yet I venture to think it was a mistake to confuse in however slight a way the approach Husserl was trying to make, an approach that issues in a theory of philosophy that is of fundamental importance.

Also it may be that Professor Gibson's ability as a translator has made him unaware of difficulties which present themselves constantly to the student. There can be nothing but admiration for the way in which he has constantly mastered the complicated sentence constructions which make Husserl's language "difficult, even for Germans" (p. 30). Time and again he breaks the back of these constructions and yet with this mastery of difficult passages has not come a simplification of the text generally. Even the index betrays this lack of simplification, for whereas the German edition is indexed with page references, the English edition has paragraph references and no paragraph numbering at the top of the page.

One could have wished that the translator's preface had been expanded to form an introduction for English readers. A glossary too would have been a welcome feature, while a brief biographical sketch would have supplied a deficiency, for there are no biographical details of Husserl available in English and very few in German.

Apart from these general considerations there are but minor faults to be found with the translation. There are slips, such as "psychological" for "logical" (p. 159) and on the same page the omission of a negative from "that we have therefore fallen into an

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inevitable *regressus in infinitum.*" Occasionally there are German constructions carried over, as in placing the verb at the end of an auxiliary clause (p. 191: "The essential relation . . .") and in inverting the verb in a conditional clause (p. 228: "*Are* the like . . ."). The word "pregnant" has been used throughout for "precise" or "exact." There are a few bad literals, too, such as "internationality" for "intentionality" (p. 443) and "model essence" for "modal essence" (p. 117). Such slips are relatively few and unimportant considering the size and character of the work and they in no wise detract from what is decidedly a fine piece of scholarly translation.

What must be said about terminology applies equally well to the German as to the English edition. Husserl is an industrious coiner of philosophical jargon. Not content with the resources of his own language, he has repeatedly gone back to the Greek for words to which he can apply his own meaning, as in the case of "epoche" which comes from the Sceptics and is well adapted to supply a positive aspect to the Cartesian method of philosophical doubt. Other linguistic difficulties which the student of Husserl must master [1] may be indicated by such examples as: doxa, protodoxa, irreal, noema (which forms its plural as "neomata"), counter-noema, noesis, polythetic; doxic syntactics, material phases (this is a refined way of saying "sensory data"), doxothetic experience. To these must be added specially adapted English words, such as "dator" and "primordial." Occasionally, very occasionally, a gleam of humor will tend to lighten the heavy going such a vocabulary entails. So it is, for instance, when Husserl admits: "That's a shocking way of putting it (*Das ist eine anstössige Rede*), but I could not see how to avoid it" (p. 198).

Not only must the English reader master such terms, but he must also be acquainted with act and content psychology, especially the former. Husserl himself says "there is no 'royal road' in phenomenology." "It is *all* of it hard" (p. 280). Unless the psychology of Brentano and Wundt is known, in some degree at least, it will be harder still.

For those who wish to study phenomenology and do not have this background it can be said that chapters 15–18 of Boring's *History of Experimental Psychology* cover much of the necessary introductory ground. Titchener's *Systematic Psychology,* though more difficult, is an even better introduction.

Psychologists will find most important material in Husserl's analysis of pure consciousness, his method of reflection, his view of the nature of intentionality, his theory of meaning and other topics of

[1] The diligent reader will find help in Eisler's *Wörterbuch der philosophischen Begriffe*, 4. ed., 1927–1929.

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fundamental interest. Even if Husserl is critical of "psychologizers" (a term requiring explanation for English readers, introduced at p. 273; cf. *Logische Untersuchungen*, V. 1, p. 52), it must be remembered that *Ideas* is part of the philosophical atmosphere of Gestalt psychology. It is most useful to read it along with Köhler's *Gestalt Psychology*. Husserl is not primarily concerned with psychology; nevertheless I am inclined to rank his *Ideas* along with Külpe's *Die Realisierung* and Titchener's *Systematic Psychology* as the outstanding contributions of the twentieth century in the field of theoretical psychology.

However, not to overemphasize the psychological side, it must be stated that there are other fruitful lines that can be followed up in studying *Ideas*. One is the historical way. Geyser has called phenomenology "neo-scholasticism"; Husserl himself says it might almost be called "neo-Cartesianism." There is also an interesting bit of history of German philosophy to be studied in the successive oppositions of Bolzano to Kant, Trendelenburg to Hegel, and Brentano to Wundt. This repeated pressure of Aristotelian tendencies against the dominant German idealism leads to Husserl's "universal idealism" and his claim to have established a new science, one that is fundamental to the whole of philosophy.

When it comes to working out the status of this "universal idealism" and to developing new positions, *Ideas* can be taken only as raising problems, not as answering them. Even in the matter of psychologism I do not believe the last word has been said. It is much to Husserl's credit, however, that he has drawn attention to the important problems connected with such a theory. As regards his "universal idealism," most philosophers will want to reserve their judgment until they can read his views on the relation of phenomenology to metaphysics.

These views are promised for a later volume, for *Ideas* is only the first of three books. It is called a general, but is really a methodological, introduction to phenomenology. This is part of the difficulty in reading the first book, that it is devoted to preliminary theory almost exclusively. Readers will welcome the illustration given at pp. 282–283, of how actual phenomenology may be carried out.

It is to be hoped, in terms similar to those quoted from Professor Gibson's article in *Mind*, that when the second and third volumes are published in Germany he will have the courage and leisure still to translate them for the benefit of English readers. It is also to be hoped that this most important work will not share the fate of Wundt's *Principles of Physiological Psychology*, which, with three volumes in the German edition, has only the first translated into English.

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*Ideas* is a most welcome addition to the *Library of Philosophy*. It is a credit to the translator and others concerned in its production. It is to be hoped that it will stimulate interest in the study of phenomenology which in English-speaking countries has lagged overlong behind interest in many related branches of contemporary German thought which can scarcely be understood without it.

ANDREW D. OSBORN.

NEW YORK CITY.

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## JOURNALS AND NEW BOOKS

THE PHILOSOPHICAL REVIEW. Vol. XLI, 2. On the Second Copernican Revolution in Philosophy: *G. W. Cunningham.* Objects and Subjects: *A. N. Whitehead.* Chance and Cosmogony: *William Savery.* Proceedings of the American Philosophical Association.

ARCHIVES DE PHILOSOPHIE. Volume VIII, Cahier IV. Études critiques. Supplément Bibliographique, No. 4.

RICE INSTITUTE PAMPHLET. Vol. XIX, No. 2. University Extension Lectures on Goethe in Observance of the One Hundredth Anniversary of His Death on March 22, 1832, delivered at Rice Institute in January and February, 1932.

SCIENTIA. Vol. LI. N. CCXXXVII–1. (Jubilee Number, intended to commemorate the twenty-fifth anniversary of the foundation of the Review.) Venticinque anni di vita: *La Rivista.* Platone e la teoria della Scienza: *F. Enriques* e *G. Diaz de Santillana.* La matematica di quaranta secoli fa: *R. Marcolongo.* Collisions with Comets as a Cause of Climate Variations: *R. T. A. Innes.* Das Spektrum der Rontgenstrahlung als Beispiel für die Methodik der alten und neuen Mechanik: *A. Sommerfeld.* La struttura delle molecole organische e l'atomisticq moderna: *G. Bruni.* Eugenio Rignano's Lehre vom Organischen in ihrer Entwicklung: *H. Driesch.* Some Aspects of the Vitamine Problem: *W. P. Kennedy.* Sur les effets des changements de langue: *A. Meillet.* La science est-elle responsable de la crise mondiale: *E. Borel.* (N. CCXXXVIII–2) The History of Cosmic Clouds: *J. G. Hagen.* Alcuni problemi di geografia e di fisica del mare: *F. Vercelli.* Ein neues Erregungsgesetz: *M. Cremer.* La notion de l'instinct: *M. Thomas.*

BULLETIN DE LA SOCIÉTÉ FRANÇAISE DE PHILOSOPHIE. 31 Année, Nos. 2 et 3. Thèse: La Notion de Philosophie Chrétienne: *M. E. Gilson.* Discussion: *MM. E. Bréhier, L. Brunschvicg, R. Lenoir, Xavier Léon, E. Le Roy, J. Maritain.* Lettres de *MM. M. Blondel et J. Chevalier.*

ARCHIVIO DI FILOSOFIA. Anno I, Fasc. IV, N. 4. In tema di ortodossia. Lettera polemica di M. Blondel al Prof. L. Stefanini. La Logica del Diritto: *F. Orestano.* Il pensiero e il suo atto: *C.*

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*Ottaviano.* Sugli scritti di Egidio Romano: *G. Bruni.* Filosofia e scienza in Goethe attraverso l'episodio delle Madri nel II° Faust, *L. Grassi.* La riforma della logica in Aristotle: *C. Ottaviano.*

Alain. Idées. Platon, Descartes, Hegel. Paris: Paul Hartmann. 1932. 304 pp. 18 fr.

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Groos, Helmut: Die Konsequenzen und Inkonsequenzen des Determinismus. München: Ernst Reinhardt. 1931. 156 s. 6.50 M.

Robinson, D. S.: An Introduction to Living Philosophy. A General Introduction to Contemporary Types and Problems. New York: Thomas Y. Crowell Co. 1932. xiv + 381 pp. $3.00.

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## NOTES AND NEWS

Professor Alfred North Whitehead of Harvard University, gave the third annual Davies Lecture in Philosophy at the Institute of Arts and Sciences of Columbia University on March 7, on the subject: "Reactions between Science and Philosophy."

The annual Schermerhorn Lectures in Religion at Columbia University are being given this year by Irwin Edman, Associate Professor of Philosophy at Columbia University, on the subject "The Mind of St. Paul." There are five lectures under the following titles: Paul and His Interpreters; Paul and Judaism; Paul and the Greek Mysteries; Jesus, Paul, and the Christian Mystery; The Mystical Christianity of Paul.

Professor Edman secured material for his study while in Europe and Asia last year, and the lectures will be published as the third volume of Schermerhorn Lectures in the Series: Studies in Religion and Culture.

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Report of the Eighth Annual Meeting of the Pacific Division of the American Philosophical Association. DONALD CARY WILLIAMS.
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THE JOURNAL OF PHILOSOPHY

# MR. LEWIS AND THE *A PRIORI*

It is my purpose in this paper to criticize and, so far as may be, to disprove a theory about the nature of knowledge, and of *a priori* knowledge concerning physical reality in particular, which appears to be one that Mr. Lewis defends in *Mind and the World Order*. I say "appears" advisedly, since it is quite plain that he does not always maintain it; indeed, as I shall later try to show, he provides us in this same book with all the materials necessary for its refutation. And some of my colleagues have argued that he never "really" holds it at all, but only seems to do so through the use of a terminology whose associations are, to say the least, misleading.

Whether or not this is in fact the case I am quite unable to say. At any rate, the view in question is widely current among us, and has gained considerable aid and comfort from a not unplausible interpretation of Mr. Lewis's statements about the *a priori*. To isolate this to my mind objectionable view, and to show that it is flagrantly inconsistent not only with sound doctrine on the subject, but with the excellently sound doctrine which Mr. Lewis himself lays down elsewhere in this same book, may serve in a measure to clarify this important problem.

The theory in question I will call the "dialectical" theory of truth, or the theory of truth as dialectical. And I shall limit myself to a discussion of the rôle of such dialectical truth in our knowledge of the external world—what Kant would have called the phenomenal world—as contrasted with pure experience on the one hand and with pure concepts on the other. According to this "dialectical" theory, the truth about the external world, such truth for example as physics claims to afford, is determined in part by the interpretative attitude of "the mind." In its simplest form this seems to mean (*a*) that the truth about physical objects depends on what we mean by them—on the way in which we "freely" interpret the data of experience, (*b*) that this interpretation is addressed merely to ourselves and hence needs no external support, and (*c*) that it can be maintained *as knowledge of physical reality* no matter what experience may be, not because it is able to delimit



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experience in advance, but precisely because it does not claim to do so. Being equally compatible with any empirical alternative, it can be held no matter what the subsequent course of events may reveal. This amounts to saying that there is a truth about physical reality which depends simply upon the way we interpret it, and that in respect of this truth—though, of course, of no other—the mind legislates for reality. This is the view that I shall criticize, and it is one that Mr. Lewis appears sometimes to defend. Since in fairness to its defenders we should see it at its best, I propose to let it speak in terms of those aspects of his theory which seem to support it.

The basis for the view is found in a situation with which Mr. Lewis deals at length. The truth or falsity of a judgment is plainly indeterminate apart from a specification of its objective, of what it is about. And recent doctrines about the relativity of knowledge in various fields have brought us to see that it is not so easy as men had previously supposed to know what one is talking about. The term "reality," for example, has "a curious complexity." For "the adjective 'real' is systematically ambiguous and can have a single meaning only in a special sense. The ascription of reality to the content of any particular experience is always elliptical: some qualification—material reality, psychic reality, mathematical reality, is always understood. And whatever is real in one such sense will be unreal in others. Conversely, every given content of experience is a reality of one sort or other; so that the problem of distinguishing real from unreal, the principles of which metaphysics seeks to formulate, is always a problem of right understanding, of referring the given experience to its proper category" (page 11).[1]

I have quoted this passage at length because I think it crucial for much that is to follow. So long as one believes, as some of our contemporaries still do, that there is just *one* "right" meaning for reality the question as to what we are talking about in judgments about reality does not arise. We *must* be talking about the Absolute, or the feeling of feelings, or the motion of electrons, even when we *seem* to have something quite different in mind. Once realized, however, that the term requires further specification, and it becomes evident that *apart from such specification* the truth is simply indeterminate. Is "finite mind" real? Is it real in what sense? *It all depends on what you mean by "real,"* on how you interpret this term. And this interpretation, clearly, is the work of the mind.

[1] All page references are to *Mind and the World Order*, New York, 1929. All italics in quotations are in the text itself.

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Evidently the recognition of plural reference, of systematic ambiguity in the categories of thought apart from some further context of relatedness, does raise the problem of meaning, of interpretation, in a unique form. And since I wholly agree with Mr. Lewis in the belief that most descriptive terms, from "length" to "reality," do possess such systematic ambiguity in their ordinary philosophical usage, I welcome the inquiry into the implications of the specification of meanings which it seems so urgently to require.

There is, then, a sense in which whether a judgment is *true* depends upon what the judgment *is*—i.e., on what it means. Is a given object three feet long? It depends on what you mean by "three feet," and because no one measure-system is in itself *the* correct one, it follows that "the mind" must choose between these various meanings in order to specify a determinate object of judgment. Apart from such choice of reference the judgment that "this object is three feet long" is neither true nor false, but simply indefinite. This is the point of departure for theories that take relativity seriously in their account of knowledge. We shall return to it in the sequel.

We are now to apply this general analysis to the status of "the datum" in knowledge. There is a brute fact element in experience, something not merely given but coercively given, which so far as it goes is authoritative in knowledge as nothing else can be. Mr. Lewis is emphatic on this point. But it is equally the case that this "given" is not in itself completely coercive in most of our judgments about the natural world, i.e., whenever we are judging about the sort of reality that is more than mere qualitative content. Being as such equally compatible with different hypotheses about physical objects, it does not force us to accept any one alternative rather than another. It follows that so far as the datum goes the mind is in a measure "free" in its interpretations of any objects other than data, to which it may refer. An interpretation which might have been different for exactly the same given experience is made on some other ground than mere givenness; it is "freely" taken, and, if we divide knowledge into the datum and the work of the mind, falls in the latter rather than in the former division.

This at times seems to be precisely Mr. Lewis's view of the matter. For "The two elements to be distinguished in knowledge are the concept, which is the product of the activity of the thought, and the sensuously given, which is independent of such activity" (p. 37). The datum is that to which thought must conform since "If there were no datum given to the mind then knowledge must be contentless and arbitrary; there would be nothing which it must be true to" (p. 39); and in matters of interpretation the mind is

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not wholly determined by the datum: "In such problems (of interpretation) the mind finds itself uncompelled save by its own purposes and needs. What is fixed datum and must be conformed to is only that welter of the given in which not even the distinction between real and unreal has yet been made. The rest is completely and exclusively our problem of interpretation" (p. 265).

Now what about this interpretation itself? That it transcends the given we have seen. But it refers, nominally at least, to a reality other than the given, which it pretends to qualify. Is it not objectively determined, so far as it claims to be true, by its relation to this further object? Can we explain the truth of judgments about physical objects by referring to the fact that "the datum" does not fully specify their nature, and that, as a consequence, we are not completely determined *by it* in our judgment *of them?*

Mr. Lewis answers with the following decisive statement. "That only can be a priori which is true *no matter what.* What is anticipated is not the given but our attitude toward it; it formulates an uncompelled initiative of mind, our categorial ways of acting. Truth which is a priori anticipates the character of the *real:* otherwise it would possess no significance whatever. The real, however, is not the given as such, but the given categorially interpreted. In determining its own interpretations—and only so—the mind legislates for reality no matter what future experience may bring" (p. 197).

The truth about our interpretations is free and can be determined in advance of experience. It is, hence, "*a priori,*" because it is addressed to ourselves, not to subsequent experience. Thus "Knowledge of such a priori principles requires only reflective self-consciousness, because it is simply knowledge of those criteria which we apply in classifying experience in one or another fashion, interpreting it in one or another way. A categorial interpretation . . . does not preclude any imaginable or unimaginable content of experience in the future, but only precludes our interpreting it in a fashion contrary to our predetermined attitude or bent" (pp. 227–228). It is obvious, consequently, that "definition, classification and inference represent no operation in the world of things, but only our categorial attitudes of mind" (p. 247). And finally, "The a priori does not dictate to nature but concerns our interpretation of empirical facts" (pp. 304).

The position, so far, seems straightforward. The truth of an interpretation can be independent of the datum because it is not about the datum. It can be independent of the future course of experience because it makes no statement about that experience. Nor does it "dictate to nature," but is simply addressed to ourselves. So far so good.

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Yet the *a priori* is supposed to provide us some knowledge about physical reality. As Mr. Lewis is later to argue, it is because we can be certain *a priori* of some such principles that in our study of physical reality we have "a basal minimum of law." How can the mind thus legislate for reality by means of commands addressed *to itself?* This is the paradox that still requires explanation. The answer is that our legislation is merely definitive, explicative, it concerns the meanings we put upon experience, and meanings are preëminently "of the mind." To say that "all men are mortal," if it is taken as explicating the *meaning* of the term "man," does not legislate out of existence any possible reality since an immortal man is by definition not possible. And that definition is of our own making. "Not only is the meaning assigned to words more or less a matter of choice—that consideration is relatively trivial,—but the manner in which the precise classifications which definition embodies shall be affected, is something not dictated by experience. If experience were other than it is, the definition and its corresponding classification might be inconvenient, useless or fantastic, but it could not be false. Mind makes classifications and determines meanings; in so doing it creates that truth without which there could be no other truth" (p. 240).

This statement confers really surprising privileges upon a definition. On the one hand, as a mere definition, it "cannot be false"; on the other, equally as a definition, it "creates truth." How both of these assertions can be true at once is a further question; but that they must both be true, that a definition is *at once* merely addressed to ourselves, as a way in which *we* classify things, *and also* legislates for the things in question, is the curious conclusion to which we are driven.

The justification for it is discovered not in a new analysis of *reality*, but only in a renewed reference to the indeterminate character of given experience. We can maintain these definitive laws as legislation for reality, because given experience can never disprove them. "The a priori as thus definitive or explicative, representing principles of order and criteria of reality . . . is a truth about our own interpretative attitude . . . imposes no limitation upon the future possibilities of experience" (p. 231). And this because "The proposition that is a priori does *not* assert any limitation of experience; it only asserts that whatever lacks some essential property, *X*, is not to be classified under some concept, *A*" (p. 303).

The legislation of mind is "free," moreover, in this final sense that it "has alternatives," and this is the very mark and sign of its dominion. "What is a priori does not compel the mind's acceptance. It is the given experience, the brute-fact element in

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knowledge, which the mind must accept willy-nilly. The a priori represents the activity of mind itself; it represents an attitude in some sense freely taken. That we elicit some formula as a principle means that we take it as forbidding something . . . which in some sense has significance. That which is incapable of any alternative is utterly devoid of meaning. The necessity of the *a priori* is its character as legislative act. It represents a constraint imposed by the mind, not a constraint imposed upon the mind by something else" (pp. 196–197). And, most conclusively, "the a priori principle which is definitive, and not a material truth of the content of experience, *has alternatives*" (p. 232).

We have now before us a complete conspectus of this dialectical theory of truth. The mind legislates for reality because there is a kind of truth about the external world which is *at once* a matter of definition, neither true nor false, *and also* prescribes the nature of the objects that are to exemplify it. This truth can be maintained independently of experience because an experience could only refute it in case it provided a relevant instance; while the decision as to whether or not it is a relevant instance is itself a mental interpretation, a choice freely made. And this choice is properly called legislative because there were possible alternatives which the mind might have adopted instead; it is the result of our active initiative.

And as we have seen there are passages in *Mind and the World Order* which seem to support this theory. I maintain that it is invalid from beginning to end. I should hesitate to make such an assertion on my own authority; fortunately that is not necessary. Mr. Lewis has himself contradicted its principal theses definitely and in detail, and it is to the weight of his judgment that I shall appeal throughout, in attempting to show (1) that "the mind" is not "free" or legislative with respect to the truth of any judgment about objects; (2) that the "interpretative principles" of mind, so far as they claim to be about physical reality at all, are not simply addressed to ourselves and hence their truth is *not* "created by mind"; and finally (3) that all given experience falls under one category or another quite independently of how we interpret it, that in so far as it is thus categorized it is limited by a generalization that refers to it, and that to the assumption that this limitation exists there is, on Mr. Lewis's own showing, no alternative whatever.

1. It is true that in its judgments about physical reality the mind is uncompelled by the datum *as such*. But that is simply because in all such cases the datum as such is not the object about which it is judging. The minimum object of knowledge, so far as

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Mr. Lewis is concerned, is the datum—or quale—in determinate relationships to other actual or possible experiences. "What is essential for understanding and for communication is not the quale as such, but that pattern of its stable relations in experience which is what is implicitly predicated when it is taken as a sign of an objective property" (pp. 124–125). Moreover, it is not about the datum even as standing in certain relations, that objective judgments are possible. "Whatever the uniformity of reality required for knowledge may mean, it *cannot* mean a fixed and uniform sequence in which the given experience is one complete term" (p. 358).

Now if the datum as such is not the subject of my judgment it is not merely true but a truism that it does not in itself determine the truth of that judgment—for the judgment is about something else. I am also not "compelled" in my estimate of Mr. Hoover's administration by the present output of textbooks on anthropology, since the state of the book trade in this particular is not conclusive one way or another on the point at issue. Why should it have seemed important, then, to emphasize this not very recondite point?

Precisely because on the dialectical theory it is assumed that if I am free so far as the datum is concerned I am free altogether. "The rest is purely and simply my problem of interpretation." But quite emphatically it is not. For to classify the datum as an instance of a certain concept is to predict of it that it will stand in discoverable relations to other experiences, such that *if* I follow up my present hypothesis the results anticipated will occur. "Thus the classification of what is presented and the predicted relationship of it with further experience are *one and the same thing*. This implicit prediction is at once a general principle and our concept of the object" (p. 134).

Further, "The ascription of reality is, then, the affirmation of possibility, and the kind of reality ascribed conforms to the nature of the possibility affirmed" (p. 183). If we now recall that it was in classifying the datum as reality of one or another sort that the mind was said to be "legislative," the following statement is simply crushing as against the "dialectical" view. "The 'if' here [in the if-then propositions which *are* our 'interpretation' of the object] depends upon our own active nature for its meaning, as has been pointed out, but the content of the 'then' clause, and the truth of the proposition as a whole, are things with respect to which the knowing mind is not dictator but dictated to. I may confront the given with different attitudes and purposes; I may proceed into the future in different ways. But *what I should then find;* what eventuations of experience are genuinely possible; that is something independent of any purpose or attitude of mine. These I seek

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correctly to anticipate in my present interpretation of the given. If they do not obtain in reality, my present "knowledge" is false. Whether they obtain or not, is determined independently of my mind. If not, then it is not determined at all, and knowledge and error are, both of them, purely subjective and meaningless" (p. 193). These relations, these possibilities of experiences, are what our concept of the object is about, and we now see that there is nothing more clearly independent of any attitude or legislative act of our own.

2. The dialectician will next object, no doubt, that while this holds good of empirical connections, it does not hold for those that are definitive and hence, like any definition, neither true nor false. Now there is a sense in which a declaration about our intentions as to the use of words is neither true nor false, but that is not the meaning of definition that is relevant here. For the dialectician must hold that definition is *at once* only such a declaration of intention *and also* a prescriptive law for physical reality. Mr. Lewis tells us that "*all* definition and *all* concepts exercise this function of prescribing fundamental law to whatever they denote, because everything that has a name is to be identified with certainty only over some stretch of time. The definition provides criteria of the thing defined which, in application, become necessary and essential laws of its behavior" (p. 257). So a definition can "correspond to a natural cleavage" and be "correlated with important uniformities of behavior," which a command addressed merely to ourselves could hardly do. And so, although he has once told us that "the a priori does not dictate to nature" (p. 304), Mr. Lewis later states that "as the matter is usually conceived, this knowledge which we find to be a priori would be included in what is meant by "knowledge of nature," since it delimits, for example, the physical and prescribes basic laws which must be true of all physical reality" (p. 311). And so far is Mr. Lewis from rejecting the "usual conception" that he finds in this *a priori* delimitation of the physical a "basal minimum of law" (p. 322) on which the natural sciences can depend.

If a definition is *merely* a declaration of intention as to what *we* will do, it does not provide certain knowledge of physical objects, since it is, as such, neither true nor false. If it does "provide necessary and essential laws," then we must accept the responsibility of inquiring whether "natural cleavages" will or will not sustain them. It is only by holding both that a definition "cannot be false" and also that it "creates truth" that the dialectician can maintain his position.

3. There is still the consideration that "the *a priori*" is free with respect to experience, since experience can not refute it, and

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hence, whatever the "independent reality" may be, it is always possible *in experience* to retain an attitude freely taken. This contention rests, however, on a really shocking ambiguity in the use of the term "experience," and one which Mr. Lewis himself renders peculiarly vulnerable. Of course *bare* experience can not refute any generalization, since it does not as such provide a relevant instance. *"This"* can not disprove the assertion that "all men are mortal" unless "this" is a man. And it is always open to me to hold that "this" is not a man. Nay, more, if "this" means the bare datum as such, I can say most positively that this is *not* a man, since, as Mr. Lewis has shown, the datum as such is *never* the subject of generalizations of this sort. Experience is then not "limited" by my interpretations, since experience is not the subject to which they refer. So far as they are concerned, anything in the way of future experience is possible. "The a priori . . . imposes no limitation upon the future possibilities of experience" (p. 231). And again: "They [our interpretative attitudes] dictate nothing as to the content of experience and no experience can conceivably prove them invalid" (p. 266).

But this is not the way Mr. Lewis usually writes of experience. "The possession of the concept or meaning is utterly irrelevant to any experience whatever, unless we could—with sufficient time and attention at least—say whether certain eventualities of experience would or would not be compatible with its application" (p. 286). Now if the *a priori* imposes no limitation on future experience then the whole distinction between what is and what is not compatible with it becomes simply meaningless, and the *a priori,* failing to provide a test of such compatibility, becomes "utterly irrelevant to any experience whatever." Yet Mr. Lewis rightly holds that *a priori* concepts are not thus irrelevant, but rather, like purposes, "must take their shape and have their realization in terms of experience; the content of the given is not irrelevant to them" (p. 24).

In another place he speaks of "the given" as excluding certain interpretations, on the ground, presumably, that the interpretation is incompatible with them. "I can apprehend this thing as pen or rubber or cylinder, but I can not, by taking thought, discover it as paper or soft or cubical" (p. 52). Yet surely, being or not being paper is no part of the brute "quale" as such. Again we read that "The qualia of the given are the clue to the applicability or inapplicability of concepts, and set the limits of conceptual interpretation" (p. 157). How this could be unless experience itself could contradict certain hypotheses, it is difficult to understand.

Hence if we treat of experience *as categorized,* not in its mere qualitative indeterminancy, we must hold of it that it *is* limited by

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the *a priori*. And Mr. Lewis does hold exactly that. "When we study the sciences of physical reality, we have this a priori knowledge of principles to which the given must conform if it fall within the class of those phenomena which are significant in this connection. Thus we are provided, a priori, with a basal minimum of law within the field, as a sort of Archimedean point for all investigation" (p. 322).

But suppose the given does *not* fall within the class of such phenomena? This, too, is a matter of discovery, not of mental legislation. Even though we rule it out as unreal, we are still conforming to *its* nature. For "to be able to classify what is presented as 'unreal' or 'illusion,' though it may represent only superficial understanding, means nevertheless a very important understanding, precisely because it means that this context of experience is not relevant in the present connection, that it can not figure as a negative instance of an empirical generalization and so on" (p. 350).

Moreover, whatever in experience does not fall within *this* class, does fall within some other, and is hence limited in its own appropriate category. "Nothing is real in all categories; everything is real in some categories" (pp. 321–322). "What is not reality of one sort is reality of another; what we do not understand in one way we shall understand in another" (p. 225). And most emphatically, "every given content of experience is a reality of some sort or other" (p. 11).

We conclude, then, that every experience is limited in the categories under which it falls, that every given experience falls under some categories, and that whether or not it falls under a particular one is a question of objective relevance or irrelevance. Its nature in each case is perfectly determinate, and in no case is the mind free to legislate for it in its appropriate categories, or to discover it as other than it independently and determinately is.

Finally, the fact that there should be such limitation of experience is something absolutely inescapable, and something itself not made by mind. For there is no possible alternative. If experience were not limited in *some* fashion it would be simply inconceivable. "Since what any substantive concept denotes in experience is some definite sequence or set of such, there could be, in an experience that was subject to no limitation upon the all-possible sequence of given presentations, no recognition of things by their appearances as even probable" (pp. 370–371).

It is true that Mr. Lewis describes this requirement that experience should be limited in its possibilities as not itself a "limitation on experience" in precisely the opposite sense to that in which he formerly used the term. It is no doubt true that in eliminating

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from the world the impossible we are not eliminating anything possible. But the decision as to what is possible and what is not is here most rigidly fixed. On the other hand, "The a priori is a peculiar possession of mind because it bears the stamp of mind's creation. And the criterion of creativity is not inevitability but precisely its opposite, the absence of impulsion and the presence of at least conceivable alternatives" (p. 213). Hence in the necessary limitation of the possibilities of experience we are dealing preëminently with that which is *not* the creative work of the mind, because there are no conceivable alternatives. I do not for a moment contend that Mr. Lewis actually means to hold that the denial of limitation with which he has ended—the absence of conceivable alternatives—is identical with the denial of limitation with which he began—the presence of conceivable alternatives. But I do hold that only when the two are identified—when we equate what the mind can not help thinking about an ordered world with what it "freely" elects to take as its own classification of the data of experience—does the dialectical theory of truth become even apparently plausible. And it is for that reason, among others, that the theory seems to me untenable.

I conclude therefore that no statements that truly prescribe laws to physical reality are made true by the decision as to how we shall classify the data of experience. The only statements in fact that are made true by our decision to mean one thing rather than another are those which assert that such in fact is what we have decided to mean by them. In all its knowledge—*a priori* or other—the mind intends to follow the nature of its subject-matter, not to legislate for it. "I am coerced only by my need to understand." True enough, but that is the most rigorous coercion of all. "For the purpose of knowledge is to be true to something that is beyond it. Its interest is to be governed and dictated to in certain respects. It is a real act with a real purpose because it seeks something which it knows it may miss. If knowledge had no condition independent of the knowing act, would this be so?" (pp. 191–192). And clearly it is not just the datum that here "dictates" to knowledge, for the datum, as infallibly given, is not something that we may miss and, moreover, our awareness of it is, for Mr. Lewis, not knowledge at all. It is the object of our interpretation that "governs" here, and if the mind is "free" with respect to it, it must be because, in Rousseauistic terms, it is forced to be free. The most thorough-going realism could not ask for a more decisive statement.

Yet it is not wholly satisfactory simply to oppose one theory by its contradictory in this somewhat abrupt fashion. A really adequate criticism must account for the mistake in question—if such

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it be—and exhibit it as a partial, though quite inadequate, expression of the truth. For, as Spinoza said, "just as light shows itself and darkness also, so truth is a standard of itself and falsity" (*Ethics*, Bk. II, prop. XLIII, note). It is the outstanding merit of this second view, which Mr. Lewis so emphatically holds, that it can give such an account of the dialectical theory from which its own results diverge so sharply. An exposition of this point will constitute our final evidence in its favor.

The plausibility of the dialectical theory rests throughout on a mistake about the relativity of knowledge which Mr. Lewis exposes with admirable clarity. It is perfectly true, as has been seen, that where a term—such as "reality" for example—is systematically ambiguous, a specification of meaning is required before statements that concern "the real" can become determinately true or false. This is true, of course, not because the term refers to no object, but because it may refer to any one of many, and the selection of the one in question is essential for unequivocal reference. The determination of such reference does not make a proposition true; it is its object that does that. But it does indicate that object and hence bring us to the position where the proposition may be *either* true *or* false. To confuse this resolution of ambiguity with the creation of truth is a subtle and fashionable mistake, but one that needs special criticism for that very reason.

Thus when the sceptics of our own day observe sapiently of the truth of any proposition that "it all depends on what you mean" the appropriate retort is simply "Well, what *do* you mean?" Apart from specification of this sort the truth of the proposition can not be determined because it is as yet no definite proposition at all. To linger among these deliciously indeterminate half-lights of possible interpretation, to transform the need of reaching a decision about meanings into an apology for never doing so—this is dialectic in its most modern dress, the last resource in philosophy of that variety of literary loose talk to which some of the disciples of Santayana seem so fatally addicted.

But once meaning *is* specified the determinate truth or falsity of the proposition depends on what?—why, on the nature of its object, of course. The determination of meaning can only bring the proposition to the status of being *either* true *or* false—it can not decide between these alternatives. So exactly Mr. Lewis has made the point in the case of another instance of relativity—that of motion. One must specify which among possible reference systems one has in mind before one's assertion about the motion of an object can have a definite meaning. "That is, there are certain properties of the object, as an independent reality, which can only

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be described in terms of some observer or frame of motion. But specify this relationship and the true description is thereby fixed. What is it that determines this? It can not be the relative motion already specified. It is fixed by the objective real character of the thing" (p. 185).

So of experience. It has many possible connections, hence many meanings. No one of these—as opposed to any other—is exclusively prescribed for our attention by the nature of the "datum as such." To select those relations which we mean to emphasize is a work for mind, and a vital one. In this sense, as Mr. Lewis observes, "A large part of the scientific search is, thus, for *things worth naming*" (p. 258). But once this selection is made, the truth depends on what we are talking about, on the object to which a proposition actually refers. It is the independent nature of the object, *thus specified*, that "creates truth" about it.

And thus to imagine that because we must know what we are talking about we are thereby absolved from the necessity of conforming to its nature, is a sheer *non sequitur*. It is parodied by Mr. Lewis in another connection in the following terms: "The size of Caesar's toga is relative to the yardstick or to some other standard of measure. No size without a yardstick. The size of things is through and through yardstickian. To be sure the fallible yardstick in my hand may not determine size in general, but the yardstick in the Bureau of Standards determines both my yardstick and all sizes that there are. It creates size" (p. 189). If the reader will compare this statement with one previously considered: "Mind makes classifications and determines meanings; in so doing it creates that truth without which there could be no truth" (p. 240), he will see that this latter assertion simply can not support the interpretation which a "dialectical" theory would put upon it.

It was Bacon, I think, who said that a little philosophy turns men from religion: but a deeper philosophy brings them back to it. So we might say of "relativism" in the theory of knowledge, that a little of it appears to discredit realism, but a more accurate account of it justifies an objectivity for knowledge more precise and more thoroughgoing than could previously have been claimed. Mr. Lewis's view of the relativity of knowledge is our best evidence that this second stage in the development has actually been achieved.

BROWN UNIVERSITY. ARTHUR E. MURPHY.

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# THE METAPHYSICS OF SPACE AND TIME[1]

INTEREST in the metaphysics of space and time has been stimulated in contemporary philosophy by the physical theory of the relativity of space and time. In studying the various contributions to the subject I have felt that the solutions to certain fundamental problems have not been formulated as explicitly as possible. In the present paper it is proposed to attempt an explicit answer to some of these problems. I shall consider four questions which, by way of introduction, may be summarized as follows:

1. Is space, or space-time, a substance of relational structure?
2. What is meant by the metrical structure of space or space-time?
3. Is there a confusion in the theory of relativity between the concepts of space and of frame of reference?
4. To what extent does the relativistic theory of space and time require an operational theory of physical concepts?

Our first problem is the nature of space. Space has often been described as a receptacle, like a box, also as a framework. It appears to me that such characterizations are unsatisfactory, because receptacles and frameworks are things in space. One would then have to think of space as in space. As we shall see, however, the idea of framework suggests essential characters of space.

Again, space has been characterized as a medium. This description has been given, for example, by Boodin, and also by Weyl, who characterizes space-time as the extensive medium of the external world. From this point of view, space, or space-time, becomes a substance. My objection to the concept of space as a medium is that it is essential to a medium to be in space. How, then, is one to distinguish space and the media in space?

Space has also been described as a class of points. Such a description raises the question as to whether a point is a thing or a position. If we conceive of a point as a very small particular entity, that is, a thing, then, since the things in the universe can be analyzed into points, the concept of space would express the totality of things in the universe. Hence there would be no distinction between things in space and space. Thus if we define space as a class of points we must interpret a point as a position. I therefore conclude that position is a quality or relation which is manifested by things which are said to be in space. This result will be the basis of further discussion.

[1] Read at the meeting of the Pacific Division of the American Philosophical Association, Stanford University, Dec. 28, 1931. The writer wishes to acknowledge the helpful criticisms of Professor H. C. Brown.

The references in the paper are to J. E. Boodin, *A Realistic Universe*, H. Weyl, *Raum-Zeit-Materie*, H. Reichenbach, *Philosophie der Raum-Zeit Lehre*.

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The essential character of space, then, is expressed by the proposition that things have position in space. The concept of position reciprocally implies that there are things which can occupy positions in space. Accordingly, I shall describe space as the ground of the manifold, or totality, of possible positions of things. A different phrasing, adapted from Einstein, is that space is the ground of the manifold, or totality, of possibilities of position of things. The concept of possible position implies that the position of one thing is a possible position for another. Thus the concept of possibility affords a basis for change in space. The concept of position implies that of thing in the sense that some positions must be occupied by things. I see no objection, however, to some unoccupied possible positions. In this way one might justify the concept of some empty space.

It has not yet been decided whether position in space is a quality or a relation. Is the character of position a quality like the color of a thing, or is it a relational property? The view proposed in this paper is that space, the ground of position, is a relational structure of the things which are said to be in space. The position of a thing is a property which manifests its relations to other things. Again, the extension of a rod might be viewed as a self-contained quality of the rod; we shall, however, analyze the property of extension into a relation between the end points of the rod.

A difficult problem in a relational theory is that of the existence of empty space. Now the relational structure which is space is characterized by the fact that things exist which are in spatial relations. Hence the possibility of a wholly empty space is not to be considered; space is at least partially filled. A position in space is defined to be empty if in the process of being occupied by a thing there occurs no contiguous action upon some other thing. Thus we may conceive of empty parts of space even in a relational theory.

Things in space are terms to spatial relations. Thus the relational structure provides the ground for the property of position, and in a loose sense it may be viewed as the framework, receptacle, or medium of the things which are said to be in space. I conclude, therefore, that the various characteristics which were suggested by our initial attempts at definition are expressed by the description of space as the relational structure which is the ground of the manifold, or totality, of possibilities of relative position of things.

Our second problem is the specification of the structure of space, in particular, its metrical structure. The problem of metrical structure is raised by the question, is physical space Euclidean or non-Euclidean?

In the following discussion I shall presuppose the concept of practically rigid body, such as is exemplified by a steel rod. We

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postulate that the extension of the rod is unchanged by a displacement. Since this assumption constitutes a definition it is a meaningless question to ask whether the assumption is true. The metrical structure of space is now to be studied by investigating the properties of configurations of rigid bodies, or of points on rigid bodies. If such configurations are described by the laws of Euclidean geometry, space is Euclidean.

This method of determining the metrical structure of space lends itself to several interpretations. If one thinks of space as an extensive medium, the structure of configurations reveals the structure of the space in which they are embedded. The rigid body then is to be looked upon as an instrument for exploring space. Just as one explores an electric field with a small electric charge, so one explores space with a rigid body. I think that this is the view of Weyl. The question then occurs, why should the rigid body be chosen as a test body? Electric forces are created by electric charges, and therefore the charge is by definition the proper instrument for exploring the field; but if space is an extensive medium it is not created by rigid bodies. It seems, therefore, more in accord with an empirical point of view to assert that the metrical structure of space is defined by the structure of configurations of rigid bodies. Thus the examination of the method of determining metrical structure reinforces our conclusion that space is a relational structure of things.

The foregoing considerations may be extended to time. Time is a relational structure of processes or events. The metrical structure of time is defined in terms of selected processes. In classical physics the metrical structure of time was defined in terms of mechanical processes, like the vibration of a pendulum, the rotation of the earth, etc. The special theory of relativity was created when Einstein employed electromagnetic processes for the definition of time. In the classical theory the principle of the constancy of the velocity of light was an experimental law which was based upon the prior definition of time in terms of mechanical processes. In the special theory of relativity the principle of the constancy of the velocity of light becomes a definition of the metrical structure of time. The special theory of relativity further achieved the union of space and time in four-dimensional space-time. In the light of our discussion of space, the point of view of this paper is that space-time is the relational structure of events. The metrical structure is defined in terms of configurations of rigid bodies and the course of electromagnetic processes.

The passing reference to the special theory of relativity must now be supplemented by a more detailed discussion. The need for the theory of relativity becomes apparent when we analyze the methods of investigating the metrical properties of space and time.

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Considering the problem of space, we must first define the metrical structure more explicitly than in the preliminary account. Accordingly, I define the metrical structure of a space as that of a configuration of rigid bodies at rest with respect to each other. Now in order to perform measurements on such a configuration one must employ a standard rod. Hence the metrical study of space is relative to the standard rod; the conditions under which the rod is employed must be specified precisely. In pre-relativistic physics this problem was ignored.

For precise specification we must introduce the frame of reference with respect to which the rod is at rest. Let us first assume that the structure to be studied is at rest in this frame. If, for example, the structure is a straight rod, we measure the length of the rod by counting the number of times that the standard rod can be laid off on it. The result of our metrical study is expressed by a number relative to the standard. For example, the result of measurement may be that the length of the rod is five meters. Again, in the metrical investigation of a right triangle we can arrive at the Pythagorean theorem, which can be expressed symbolically by $a^2+b^2=c^2$, the equation expressing a relation between variable numbers.

Suppose, however, that the structure to be studied is moving with respect to the frame in which the rod is at rest. Then the previously described methods are not applicable. Hence we need, for example, to describe new methods of measuring the length of a rod. In order to study the structure of moving configurations we mark the simultaneous positions of its points on the frame of reference. We then measure the configuration of the representative points of the frame. The application of this definition, however, requires a definition of time. In the special theory of relativity time is defined by the principle of the constancy of the finite velocity of light. In view of the finite velocity the metrical representation of the moving structure differs from that of the same structure at rest. Thus a figure which is judged to be a sphere when at rest is judged to be an ellipsoid when in uniform motion. The description of the metrical structure of configurations varies with motion.

To summarize: a structure is described with respect to a rod in a frame. If the structure moves its relation to the rod is different. It is not surprising, therefore, that the metrical representation of a configuration depends upon its motion relative to the rod.

The discussion thus far, however, seems to have no bearing on the problem of space. We have merely seen that on account of the definition of time in terms of the finite velocity of light the geometrical properties of bodies change with motion. Now the theory of relativity is based upon the further assumption that a set of

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frames is equivalent for the study of phenomena. That is, we may study a uniformly moving structure in a frame with respect to which the structure is at rest. The rigid bodies at rest in this frame, which is moving uniformly with respect to the original frame, define a metrical structure of space associated with the moving frame. The metrical properties of the structure relative to the moving frame, in which the structure is at rest, are the same as those when it is at rest in the original frame, and therefore different from those with respect to the frame in which it is in motion. If we define the metrical structure of a space to be that of a set of rigid bodies at rest with respect to each other, then we find that the metrical structure is relative to a frame. That is, space is relative to a frame of reference.

We also seem to have come upon the notion that a space moves with respect to another space. This seems to be self-contradictory since space is that in which motion occurs. Indeed, the concept of space appears to have acquired a new meaning. One may contend that the significance of the theory of relativity is that the geometry of structures depends upon the frame. Thus it appears that one can entertain the hypothesis that the concept of space is to be eliminated from physics like the concepts of the ether and of material substances. From this point of view the proposition that a body is in space means that it is related to a frame of reference. The concept of space is then replaced by that of frame of reference. It appears, however, that one could still think of space as a single medium or void in which the various frames have position. Such a concept is of an indeterminate possibility and appears to be of no use. Nevertheless, if my analysis is correct, it may thus be possible to satisfy both the physical relativists and the philosophical absolutists.

The preceding discussion of the theory of measurement and of the theory of relativity suggests the final topic for consideration in this paper. I wish briefly to consider whether the theory of relativity requires an operational interpretation of physical concepts.

I recall that in order to study the geometry of a structure one uses a rod in a frame of reference. By operations with the rod one obtains numbers which satisfy certain functional relations. Now the classical physicist assumed that he directly studied properties of physical reality and that the laws were functional relations between properties. The view of the writer is that the numbers assigned to the properties are the subject-matter of physical theory. In classical physics it was believed that one directly studied the geometrical properties of a structure; one overlooked the part played by the standard rod. The relativistic theory is based upon the fact that we observe a relation between the structure and the

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rod. The relation is represented by a number. One may now ask the question, is not this relation the true subject of our equations? That is, can physics be relativistic without being operational?

In answer one may assert that the nature of the relation is described or defined by the procedure of obtaining the number. If we merely refer to the relation between the moving structure and the rod the relation is indefinite.

The view adopted in this paper is that the equations express functional relations between numbers. The fundamental numbers are obtained by a physical operation such as must be performed in a measurement of length. In this sense the theory of relativity is based upon an operational theory.

One might contend that the real subject of physical investigation is, not the number, but the operation. It appears to me, however, that if one wishes to go behind the numbers the object of investigation is coincidences or possibilities of coincidence. The fundamental characteristic of the operation of measuring length is the observation of coincidences of the end points of the standard rod with points on the rod whose extension is being measured. Now a coincidence is a type of physical phenomenon. The physical operations in measurement are for the purpose of bringing about the phenomena. Thus the operation is a means and not an end. An experiment is performed in order to enable one to obtain observations; the description of the experiment is not the observation. The data of physical investigation are then sets of coincidences.

We may now give a new definition of space or space-time; it is the relational structure of possible coincidences. In the general theory of relativity the law of gravitation expresses the relation between matter and the metrical properties of the structure of possible coincidences. The law of motion of a particle is that it describes a geodesic in curved space-time.

Let us again consider whether space-time is to be viewed as a substance, whose structure is revealed by the relational structure of coincidences, or whether it is merely the relational structure. Weyl and Reichenbach appear to hold that curved space-time constrains the particle in its motion. Thus there is a disposition on the part of relativists to speak as if space-time were a substance. It is the point of view of the present paper that the empirical point of view requires the relational interpretation. Thus the statement of the law of motion of a particle does not express a constraint by a substance, but only a description of the motion in the relational structure.

University of California,
Berkeley.

V. F. Lenzen.

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## BOOK REVIEWS

*Samuel Johnson: His Career and Writings.* Edited by HERBERT and CAROL SCHNEIDER. New York: Columbia University Press. 1929. xvii + 526 pp.; viii + 603 pp.; ix + 641 pp.; xiii + 397 pp.

A notable service has been performed in these four sumptuous volumes on the career and writings of Samuel Johnson, the first president of King's College and our first native idealist. In the first volume concerning Johnson, the philosopher, Professor Schneider offers new light on the baffling problem of the failure of a notable form of idealism in our Colonial days. While it is doubtful if Johnson directly influenced Jonathan Edwards in his idealistic treatment of the Puritan theology, yet he himself derived his inspiration directly from the good Bishop Berkeley. In spite of Berkeley's fame and social standing, his metaphysics had but slight effect on this side of the water. For this four new reasons have been adduced: "The Anglican clergy were neither competent nor interested in technical philosophy. The physical scientists, or 'natural philosophers,' like Franklin and Colden, regarded it as merely ingenious and too fantastic. The theologians whom it might have interested were captivated by the idealism of Edwards, which was at once more orthodox and more familiar, and hence more plausible. And as for the schools and academies, they found Paley less original, less provocative, more fashionable, hence more teachable."

There were, of course, other reasons for the public's indifference to idealism; this was an age of commercial expansion and the winning of the West interested men more than speculations in pure thought. Again wars and rumors of war disturbed men's minds, Johnson himself being much perturbed by the news of Braddock's defeat and the loss therein of some of his particular friends. But what probably caused the comparative failure of such an interesting work as the *Elementa Philosophica* was its conservative spirit. In a way this beautiful little book denoted a humane reaction against the more sinister doctrines of Puritanism, such as infant damnation and eternal punishment, but it did not go the whole way in presenting natural religion and free thinking. The reason for this was largely political. As an adherent of Anglicanism Johnson may have caught much of the urbanity of the Church of England, but that church was founded on Episcopacy, and Episcopacy, to the independent Yankee, represented abject dependence upon the British crown.

Unfortunately Johnson himself put a political twist upon his religious beliefs. There was no reason, as he said, that the church

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should not have bishops, at least two, or three, in this vast tract, to ordain and govern their clergy, and instruct and confirm their laity. Hence he put this question to the author of the *London Magazine:* "Whether it would not be a wise expedient that along with the appointment of bishops some gentleman of great dignity and worth should be appointed by the King to be in the nature of a viceroy or lord-lieutenant." This would never do, and Johnson's proposals gave good ground for the ultra-Americans to oppose the establishing of King's College in New York. Owing to this opposition the college began in a small way, there being only a handful of pupils in what Johnson described as "one of these dark corners of the earth where books and the means of knowledge are so much wanted."

It must be said that Johnson's own textbook was worth a ship load of those metaphysical cobwebs such as he was brought up upon in Yale College. But his own *Elementa Philosophica* contains two valuable features, first a compendium of philosophy which in its classification of the sciences and various branches of learning furnished to its young readers a most valuable Orientation course. Another feature was the attitude of this work toward what Johnson was wont to call the infant mind. At a time when Jonathan Edwards, with his professional pessimism, referred to children as "young vipers," Johnson wrote as follows: "They are not to be treated as trifling fondlings . . . but as creatures of some importance in the world to be nursed up and ripened with great care and diligence, and the best way to teach them to exercise their reason is to converse with them as reasonable creatures and reason with them."

These views of Johnson apparently appealed to Franklin, for the latter published Johnson's book and saw that it was used as a required text in the Academy of Philadelphia. How Franklin dangled this as a bait before Johnson, along with certain attractive offers of salary and emoluments, is an amusing story. But in spite of this use of the book in Philadelphia and New York that use did not spread further North. From the time that Johnson was read out of Yale College for joining the Church of England he was never at peace with the authorities at New Haven and the story of the bigotry of his Alma Mater makes painful reading. He expostulated with Thomas Clap and regarded it as an inconsistency that he could accept "such vast benefactions from gentlemen of the church of England," such as Elihu Yale and Bishop Berkeley, and at the same time fine some of his students for attending services in the Church of England, even in the case of two sons who attended the services conducted by their own father. However it must be said that such expostulations were not entirely disinterested, for Johnson long fought against the established Congregational church of Connecticut

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which prevented a fair share of the public tithes going to the Church of England Society which he represented.

The autobiography and letters of Johnson given in the first volume of this series furnish a perfect mine of information for those interested in the beginnings of our Colonial colleges. In spite of a certain religious conservatism, and of the ecclesiastical quarrels in which he was engaged, Johnson left the impress of his personality upon King's College. The rules and regulations for the students were very liberal for that day. It was not a mortal sin to cut chapel, for non-attendance was penalized not by loss of face, but by loss of cash. Again, the books which the students could read were not censored as they were at Yale and Harvard and Princeton. Finally King's College, being located in the metropolis, from the very first had a cosmopolitan air, and to those who do not despise the day of small things it is no surprise to learn that an institution which began with seven students should now number tens of thousands.

WOODBRIDGE RILEY.

VASSAR COLLEGE.

*The Puritan Mind.* HERBERT WALLACE SCHNEIDER. New York: Henry Holt & Company. 1930. 301 pp.

It has long been a paradox how an insignificant Oriental tribe on the other side of the globe should have so vitally effected the great continent of North America; in other words, why the Jews and their sacred writings should have brought about the Puritan mind which still rules in our midst. Upon this question Professor Schneider throws unexpected light. As he says: It would be difficult to understand how a tradition as foreign as the Hebraic account of history could be so firmly implanted in American soil, had it not possessed an initial relevancy and moral vitality. The Puritans, as he further explains, turned to scripture not only on account of its authority as inspired, but because it gave them comfort and counsel in similar experience. This similarity was pointed out in Cotton Mather's *Magnalia,* where New England was called "The American Desert," and where the "divine slaughter" of the Pequots was likened to the Hebrew's ways with the heathen. But underneath these similarities lay the deeper philosophic theory of manifest destiny. As the Jews were guided by divine predestination, so were the Yankees, and the Commonwealth of Massachusetts became a counterpart of the ancient chosen people.

In resolving this paradox of history the author somewhat contradicts himself in his Prologue where he asserts that Puritan New England tradition, together with its problems and ideas, has all

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but disappeared and we turn to it, if indeed we do, not because it forces itself upon us, but because we occasionally visit the monuments and tombs of a buried antiquity. This conclusion is perhaps based on Professor Schneider's distaste for Jonathan Edwards and his followers. We may agree with him that logic choppers, like Hopkins and Dwight, produced works about as appetizing as so many bales of hay, yet, as is later acknowledged, it would be unjust to Puritan theology to give the impression that it was buried utterly by Edwards' disciples. The theology may have perished, but the theocracy remains. As the matter has been put by Henry Bamford Parkes in his recent work on *Jonathan Edwards, the Fiery Puritan:* "It is hardly a hyperbole to say that, if Edwards had never lived, there would be to-day no blue laws, no societies for the suppression of vice, no Volstead act."

The Puritan mind is still with us, but in a disguised and diffused form. As the New England Commonwealth was founded in large part as a missionary society for the Indians, so the United States, according to such organizations as the Methodists' Board of Morals and the W. C. T. U., is a society for moral uplift. Foreigners have noticed this and smiled at statements regarding our noble experiment of prohibition, and America as the moral leader of the world. The subject could be pursued further, since modern Puritanism, like Colonial Puritanism, has its black side. The present-day bootleggers and gangsters were matched by such an organization as the Royal Assiento Company through which certain pillars of the church in Massachusetts exported African rum to the coast and imported slaves into New England. In addition there were such real estate speculators as the royal governor who seized the lands of the Stockbridge Indians and distributed them in blocks to his friends and relations.

The Puritan mind could justify these "wars of the Lord," for the Indians were the "spawn of hell," but the enemies within were perhaps more dangerous than those without, and what the author has to say about Roger Williams makes rich reading. This father of religious toleration in America arrived at his liberality in an indirect way. He started as a sectarian who contended that he alone knew the truth and that all the New England churches should adopt his idea. As the matter is put here in a neat paradox: "He began by trying to make the Holy Commonwealth absolutely holy; he ended in a thorough disillusionment about the entire theory." It was for this reason that Rhode Island became a refuge for all sorts of religious misfits. The Quakers, for instance, were an impossible set of people who could no more get along in Massachusetts than the early Christians could in Rome. History in a way re-

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peated itself, for it seemed as subversive of authority, when the Quakers would not remove their hats in court, as it did when the followers of the Lord would not throw a bit of incense on the altar of the Emperor.

Professor Schneider's work is rich in suggestive paradoxes. Thus the chapter on the "Great Awakening" shows that Edwards was driven from his pulpit because his parishioners did not wish it to come out that their sons and daughters were reading "lascivious" books. Again the chapter on "The Discovery of England" shows how an easy-going form of deism, such as that in the Church of England, was slow in gaining a foot-hold in America because the question of Episcopacy was complicated by the question of Independency. English bishops were considered agents of the British crown and for this reason a liberal and tolerant scholar like Dr. Samuel Johnson, the first president of King's College, had comparatively slight influence upon philosophic thought, an interesting point which Professor Schneider has brought out at greater length in his four volume edition of Johnson's works. In the remainder of the present work the reader will find much stimulating reading in the further chapters portraying the interrelations of the Declaration of Independence with the decline and fall of the Puritan theory and also the final chapter on "Ungodly Puritans," dealing with those subtle critics of Puritanism, Benjamin Franklin and Nathaniel Hawthorne.

WOODBRIDGE RILEY.

VASSAR COLLEGE.

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## JOURNALS AND NEW BOOKS

REVUE DE METAPHYSIQUE ET DE MORALE. 39 Année, No. 1. Correspondance inédite, publiée par A. Peyre: *Ch. Renouvier et Louis Ménard.* De la vraie et de la fausse conversion (*suite*): *L. Brunschvicg.* Sur le mythe de la politique: *P. M. Schuhl.*

THE PERSONALIST. Vol. XIII, No. 2. Creative Ideas in Western History: *R. T. Flewelling.* A Study of Spinoza: *B. A. G. Fuller.* Bowne's Doctrine of Freedom: *C. D. Hildebrand.* Carr's Contribution to Personalism—II: *J. W. Buckham.*

Gurvitch, Georges: L'Idée du Droit Social. Notion et Système du Droit Social. Histoire doctrinale depuis le XVII^e siècle jusqu'à la fin du XIX^e siècle. Préface de Louis Le Fur. Paris: Recueil Sirey. 1932. ix + 713 pp.

Gurvitch, Georges: Le Temps Présent et l'Idée du Droit Social. Paris: J. Vrin. 1932. xvi + 333 pp.

Hirsch, N. D. M.: Genius and Creative Intelligence. Cambridge: Mass.: Sci-Art Publishers. 1931. 339 pp. $3.00.

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Itard, Jean-Marc-Gaspard: The Wild Boy of Aveyron. (Rapports et Mémoires sur le Sauvage de l'Aveyron.) Translated by George and Muriel Humphrey. Introduction by George Humphrey. (Century Psychology Series.) New York: Century Co. 1932. xxi + 104 pp. $1.25.

Joël, Karl: Wandlungen der Weltanschauung. Eine Philsophiegeschichte als Geschichtsphilosophie. Leiferung 11, Band II, Bogen 41–45. Tübingen: J. C. B. Mohr (Paul Siebeck). 1932. Pp. 641–720. 3.50 M.

Marburg, Clara: Sir William Temple. A Seventeenth Century "Libertin." New Haven: Yale University Press. 1932. xviii + 128 pp. $2.00.

Murchison, Carl, editor: A History of Psychology in Autobiography. Vol. II. Worcester: Clark University Press. 1932. xvii + 407 pp. $5.00.

Pitkin, Walter B.: A Short Introduction to the History of Human Stupidity. New York: Simon and Schuster. 1932. xii + 574 pp. $3.50.

University of California Publications in Philosophy: Studies in the Nature of Facts. Volume 14, pp. 1–232. Berkeley: University of California Press. 1932.

Jolivet, Régis: Études sur le Problème de Dieu dans la philosophie contemporaine. Lyon et Paris: Emmanuel Vitte. 1932. 240 pp.

Neunzehntes Jahrbuch der Schopenhauer-Gesellschaft für das Jahr 1932. (Ausgegeben am 22 Februar 1932.) Heidelberg: Car Winters Universitätsbuchhandlung. xii + 433 pp. 11 M.

Robinson, Edward S.: Association Theory To-day. (Century Psychology Series.) New York: Century Co. 1932. viii + 142 pp. $1.50.

Schoen, Max: Art and Beauty. New York: Macmillan Co. 1932. 230 pp. $2.00.

Shryock, John K.: The Origin and Development of the State Cult of Confucius. (Published for the American Historical Association.) New York: Century Co. 1932. Limited edition. xiii + 298 pp. $4.00.

Sée, Henri: Science et Philosophie d'après la Doctrine de M. Émile Meyerson. Paris: Félix Alcan. 1932. 203 pp. 15 fr.

McTaggart, J. McT. E.: A Commentary on Hegel's Logic. Second Impression. Cambridge: At the University Press. New York: Macmillan Co. xv + 311 pp. $4.00.

Collected Papers of Charles Sanders Peirce. Edited by Charles Hartshorne and Paul Weiss. Volume II: Elements of Logic. Cambridge: Harvard University Press. 1931. xi + 535 pp. $6.00.

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Combes, Marguerite: Le Rêve et la Personnalité. Préface de André Lalande. (Bibliothèque de la Revue des Cours et Conferences.) Paris: Boivin & Cie. 1932. 267 pp. 20 fr.

Harlow, Victor E.: A Bibliography and Genetic Study of American Realism. Oklahoma City: Harlow Publishing Co. 1931. 132 pp.

Haserot, Francis S.: Essays on the Logic of Being. New York: Macmillan Co. 1932. 641 pp. $4.00.

Jackson, A. V. Williams: Researches in Manichaeism. With Special Reference to the Turfan Fragments. New York: Columbia University Press. 1932. xxxviii + 393 pp. $5.00.

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## NOTES AND NEWS

To the Editors of the Journal of Philosophy:

During the night before Christmas Eve, a disastrous fire destroyed a large portion of the Library of the University of the Witwatersrand, which, pending the erection of a permanent library building, had been housed in a temporary structure.

Among the books destroyed by the blaze were many philosophical and psychological works by American scholars. Owing to my own connection with Harvard and other American university institutions and my many personal friendships with American thinkers, the works of American philosophers and psychologists were probably better known to, and more extensively used by, my students than by those of most other British universities. Hence the loss of many American works is particularly serious.

Unfortunately, the loss is only in small part covered by insurance; and it will be readily understood that, in the midst of the present world-wide depression, it is difficult to raise the sum required for the re-purchase of all the books which have been lost.

In these circumstances, I venture to appeal to all American philosophers and psychologists, and especially to my old colleagues and friends, for the gift of author's copies of their own writings or duplicates from their libraries, to help me build up again, as soon as possible, a working library for my students.

Every such gift—addressed to the Librarian, University of the Witwatersrand, Johannesburg, South Africa—will be gratefully acknowledged, and the names of the donors, together with the occasion of the gift, will be recorded in the volumes themselves.

R. F. Alfred Hoernlé.

University of the Witwatersrand.

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The program of the Thirty-third Annual Meeting of the Western Division of the American Philosophical Association, which met at the University of Michigan, March 24–26, 1932, is as follows:

THURSDAY, MARCH 24

2 p.m.

The Development of James's Pragmatism Prior to 1879
*Maurice Baum*

Mr. Broad and the Case for the Sensum Theory.....*George Gentry*

"The Parmenides" in the Light of the Propositional Function
*Eleanor Bisbee*

The Sources of Bradley's Antinomies of the Good.....*J. H. Farley*

8 p.m.

Annual Smoker

FRIDAY, MARCH 25

9 a.m.

Current Scepticism of Metaphysics.....*W. S. Gamertsfelder*

Relational Categories and the Quest for Unity.....*Marvin Farber*

Some Philosophical Implications of Present Day Physical Theories
*E. B. McGilvary*

11:30 a.m.

Business Meeting

2 p.m.

*Section A—Problems of Epistemology*

The Psychology of Heraclitus.....*M. T. McClure*

Epitomization and Epistemology.....*George P. Conger*

The Philosophic Uses of Experimental Psychology
*Charles Hartshorne*

The Genetic Approach to the Ego-centric Problem....*J. A. Melrose*

*Section B—Problems of Induction*

The Logical Character of the Principle of Induction..*Herbert Feigl*

The Mystery of Scientific Discovery.....*A. C. Benjamin*

The Concepts of Order and Probability in the Writings of Cournot
*Merritt H. Moore*

The Existential Status of Facts and Laws of Physics..*Karl Schmidt*

5 p.m.

Tea

7 p.m.

Annual Dinner

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Presidential Address: Philosophy and the Problem of Value
*A. P. Brogan*

SATURDAY, MARCH 26

9 a.m.

Conscience as a Function of Doing-Suffering.....*T. V. Smith*
Types of Moral Judgments.....*Glenn R. Morrow*
Axiology as the Logic of the Social Sciences.....*Howard O. Eaton*
Meaning and Value, A Study of the Neo-Kantian Philosophy of Value .....*Bonno Tapper*

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Henry Holt & Company, New York, who published in 1929 the *Essays in Honor of John Dewey,* have announced that they are disposing of the remaining stock of this volume at seventy-five cents per copy.

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Dr. F. S. C. Northrop, Associate Professor of Philosophy at Yale University, has been awarded a fellowship from the John Simon Guggenheim Memorial Foundation for 1932–1933 to review and evaluate current conceptions of the nature of mathematics and formal logic.

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Professor John Baillie of Union Theological Seminary will give the 1932 Lecture Series of the Charles F. Deems Lectureship in Philosophy at New York University, Washington Square College, on April 6, 7, 8, 13, and 14. The general subject, "The Religion of the Stoics and its Relation to Christianity," will cover the following topics: The Painted Colonnade; The Education of Zeno; The Stoic Rule of Life; The Stoic Creed; Stoicism and Christianity.

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The officers for the coming year of the Western Division of the American Philosophical Association, elected at the meeting at Ann Arbor, March 25, 1932, are as follows: President: M. T. McClure; Vice President: G. P. Conger; Secretary-Treasurer: E. T. Mitchell; Members of the Executive Committee: E. A. Burtt; J. H. Farley; C. B. Vibbert; A. E. Avey; Karl Schmidt.

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# THE JOURNAL OF PHILOSOPHY

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THE JOURNAL OF PHILOSOPHY

# SOME METAPHYSICAL IMPLICATIONS OF THE PRAGMATIC THEORY OF KNOWLEDGE[1]

CARTESIAN dualism has persisted because of the demand of the physical scientist for a free field. The idealist-philosopher, of the nineteenth century, and the scientist were in two different fields. There could, therefore, be no conflict between them, although in this partnership the scientist dominated, for the philosopher had eventually to come back to him.[2] While deduction was the method of the philosopher, the freedom of the scientist lay in his experimental method. Accordingly, the scientist maintained a world that would be free from difficulties that would not answer to that method. If the philosopher found paradoxes in the scientist's taking experience generally, sometimes as objective and sometimes as subjective, the scientist shrugged his shoulders. He was getting results with methods that would have been even more paradoxical if synthesized with the Hegelian dialectic. What could not be subjected to experiment was, therefore, turned over to the philosopher, who was dogmatist at large.

But in our century the philosopher, like the scientist, has come to a better grasp of the significance of scientific method. And at the same time the scientist has been forced into the field that he had assigned to philosophy, the field of consciousness. For the field from which he had excluded consciousness became inadequate to scientific possibility. Nevertheless, consciousness emerged in the scientist's field in a very different sense than it had in that of the philosopher. Philosophic attempts to deal with the "immediate data of consciousness" have been, and even yet are all too much, interested primarily in the "immediate" rather than in the "data." It is significant, therefore, that as a problem of science, the field of consciousness has not appeared as one of abstractly immediate content, e.g., secondary qualities. Consciousness has appeared as a

[1] Read in part at the meeting of the Eastern Division of the American Philosophical Association, New Haven, December, 1931. Mr. Dewey has said that for a long time books and articles by Professor Mead would continue to appear. This paper owes much more to Professor Mead than would be indicated by any set of footnotes.

[2] Royce: *Spirit of Modern Philosophy*, p. 168.



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problem for the scientist in the failure of absolute entities. It has appeared as perspectives of consentient sets determined by their relation to so-called percipient events, as frames of reference involving observers, and as statements of results in terms of methods of measurements. And the concept of "method" here introduced marks the field of consciousness as definitely manipulatory in character; a notion that is further evident when one considers the function and importance of the laboratory in scientific achievement.

What in my estimation is important here is that the scientist as observer is much more than an individual to which things are present, or more even than an individual who can indicate them to others. Thus Mr. McGilvary [3] in his exposition of some of the phases of relativity finds need for "observers." But these are not necessarily the sort of observers in which we are interested. They do not make scientific observation in the sense of observation as it is considered in discussions of scientific method. I mean simply to say that Mr. McGilvary in his simplified illustration could easily have substituted photoelectric cells for his observers. The significant thing is that the scientist finds it necessary to organize data in terms of frames of reference in relation to each other. In short, the absolute world which the scientist had constructed in the two previous centuries has disappeared between his fingers.

Consciousness is found in the actual organizing of perspectives, be they in terms of fields of force, or of environment, or of consentient sets, or more generally, of experience. The older parallelism located consciousness in the individual. But now consciousness is found in the reflective scientific activity of an individual already located in an experiential world. On the one hand, the environment is not just a number of sensory attributes, or *states of* consciousness, nor on the other is it irrelevant to the individual. The individual is in a field of activity. And just as Hume could turn his back calmly upon his solipsism to play backgammon, so the modern psychologist begins simply by accepting the individual as living inside the world. The psychologist of the juvenile court wants to find out what sort of a world it is in which the child is living. The child may have parents that irritate him. But the psychologist is not interested in the absoluteness of irritable parents.

It is said that a special wasp must bore into the flower of the Smyrna fig tree and carry the pollen. The wasp is an insect and the tree is a plant. There is nevertheless a short intersection of those two biological histories. What the wasp or the tree does before or after the pollenization is not in the history of the other. But the man who cultivates the tree scientifically, and imports the wasp, has

[3] *The Philosophical Review*, Vol. XL, p. 358.

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somehow gotten into both histories. In doing so he is neither fig nor wasp nor both. He is reflective, and the histories are there for him as matters of reflection. The wasp and the tree have no intention or purpose, though they are each essential to the life of the other. To get such an intention each of them must be conscious of what the other is about. If the wasp were worried about how to keep the fig trees going, it would be fairly conscious. But actually, I suppose, the wasp is getting along under the stress of immediate circumstances. In the case of the grower not only is there the intersection, but the individual gets into the history or perspective of the other—and this is consciousness. It means putting oneself at the place of the other in point of reference. Logically, one can view the universe from the standpoint of a wasp.

There is, some suppose, a fundamental difference between the unreflective and the reflective attitudes. In the unreflective attitude, all items of experience are immediately experienced and as being directly there, do not require an "inside" or "something yet to be revealed." But the principally important fact is that as such they occur in a temporal order. They may have different dates in the act. Time is definitely in everything, at least in everything outside the manipulatory areas. What is directly there in the experience of the organism may be said to be simultaneous with the organism, and lies in its "now." In so far as what is there in experience holds forth a "promise" of something further, it may be called a stimulus. Thus we can have a situation in which what is "there" is not merely there, but holds a promise for the future. As a promise, the item is *surface*—qualitative.

We are not going back to consciousness as a secretion of content by the nervous system. Meanings do get expression as reactions of the organism, and obviously some of the conditions for the organization and continuity of action lie in the structure of the organism. What we do with regard to the thing represents in some sense the overt expression of a motor attitude called out as a tendency to act in that direction. The item as a stimulus to immediate activity calls out in the individual a terminal attitude which is definitely in the experience of the individual. The continuous interplay between the complex and progressing stimulus and the response, initiates, maps out, and controls the intermediate action or approach of the individual, so that the way of approach is dependent upon how he is going to take hold of things. The way in which we are ready to sit down at the table determines our approach to it. What the table is may not be in our consciousness at all. So long as we have the terminal attitude we do not feel called upon to make a judgment as to what the thing is. *There are no alternatives present to us.*

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The response is conditioned, determined, dynamic, and progressive. And this unreflective action, as in the case of instant decisions of experienced executives, is direct and remarkably sure. Only reflectively do we hunt out among presented alternatives enduring articles on the basis of which to act intelligently. Reflection is the refusal to commit oneself immediately to one's intuitions.

The world in which problems arise or events take place is a world that is had, rather than a mathematical world of points and instants, or a logical world. It is only in the perceptual world that we get reality. In this perceptual world the "distance" of the thing is a promissory character. And the distant thing is temporally, as well as spatially, separated from us. If we do not stop to think, if we just act toward what is there, then the reality not in immediate experience lies ahead, and we are not trying to state to ourselves what the thing is. The bird pursuing the moth has the reality ahead of it. He is responding to a stimulus the reality of which is there in his experience, but not as enjoyed eating. The distant things always lie ahead of us in terms of time and passage, which belong to extension. This thing just ahead is reality; it is what we are after, and we do not experience it as existing now. Lisa crossing the river on the ice cakes reacts to the cake ahead as she hops from the one on which she paused. The reality of the latter is there in her experience. But the reality of the cake to which she responds, lies in her (immediate) future.

In reflective activity we stop to put ourselves into the situation or perspective ahead. Hence the sort of reality in which we are interested reflectively is referred to the past or to the future. The problem that remains, then, as Professor Mead has pointed out, is how one gets into different perspectives. It is the problem of formulating a theory of the cognitive relation of the individual in his environment. The whole function of consciousness lies in the relation we set up between the promise and the fulfillment. It occurs in the stoppage of the act, that intervenes between the stimulus and the consummation. If we have two acts which exclude each other with reference to the terminal object, they lead to conflict and inhibition. Direct action for a time is stopped, and there is more or less breakdown in habit. But this gives only an opportunity for reflection. Reflection may in fact not take place. The stoppage may occur in lower forms. Thus the dog stops as the man prepares to throw a stone. But he does not reflect. Another impulse sweeps him and he turns yelping in flight. This stoppage in the human individual is often taken advantage of and is necessary for reflection. The wise man, unlike the beast that perisheth, crosses his bridges before he comes to them. In the interest of the future

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we seize upon the interim to search all the now for possible trace of the permanent—for things that will remain the same with us and upon which we may depend. Reflection comes upon us in the experimental activity of representing to ourselves selected elements that are alternatives or possibilities simultaneous with each other. That which is common to the conflicting elements gets into the experience of the organism and becomes the condition of the solution. In the direction of this solution motor attitudes are called out as tendencies to act. There must, therefore, be a mechanism for thus calling out these responses; and it is primarily lingual in character.

Professor Mead has given an eminently able statement of this in his analysis of the "Significant Symbol."[4] As Professor A. W. Moore summed it up, "we know that language is not a tag attached to the results of abstraction but that it is a necessary part not only of the act of abstraction, but of the experience of an object and the existence of a self."[5] If one can, when exciting another to act, call out in himself the tendency toward the same act, he is in a far better way of being conscious of what he is about. The same function is in him and in the other. In this sense he is getting something that is universal. Here interlocutory conditions obtain, and these conditions present the reflective object. But though it is social in nature, it is not necessarily public. We are thus here interested in the retroactive effect of communication upon the individual. In so far as the individual in communication indicates things to others, he indicates them to himself. Forthwith, they are there for him as "selected out"—as universals. As such they become subject to manipulation, criticism, and elaborate technical development. In the individual it is the means of presenting or of indicating to himself in a universal fashion the alternatives characteristic of the manipulatory area. This is the achievement of the reflective object. One "turns it over in his thought" and "views it from all sides." In no sense is this foreign to the physical world, for the physical object lies in and is gotten hold of in the manipulatory area. The timeless characteristic, of a universal, is that it is communicable to others and to oneself. In reflection, then, the permanent, static relations occur by which we import the future into the now, or place ourselves in the perspective ahead. Hence it is an abstraction from the passage characteristic of the perceptual world.

The ideal of science has been stated to be one of reducing passage to an instant, leaving a static world in which there is a distribution of compresent, timeless particles. In it everything is clamped

[4] "The Genesis of the Self and Social Control," *International Journal of Ethics*, Vol. XXXV, No. 3, 1925.

[5] *Proceedings of the Sixth International Congress of Philosophy*, p. 279.

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down. The whole universe is simply an object establishing one perspective. Everything is an absolute object in external relationship to everything else. If we take the whole universe at an instant, then we have a world of things "simply located," in Mr. Whitehead's phraseology. The things are simply what they are. If we can abolish passage and say that this is what the world is, then we abolish motion. We have an absolute world. There is no perspective, save that of God, and there is no time. Everything is what it is and where it is out of relation to everything else.

Bergson has insisted that if we turn to the psychical we have a sort of extension or time different from the physical. In the former the pulses of time are not commensurable. Things are coming in and slipping out of experience. The processes of change that are going on are so identified with the content in the psychical that they can not be abstracted or separated. At times things hurry along —at times they drag. And the excitement or drag of an experienced thing is an essential part of it. This sort of process is not physical. Only if we kill the process, can we cut up its corpse into commensurable units.

What Bergson overlooks is that stopping the process is an essential part of the process. We have to stop to consider, to speculate, to get hold of something that endures. This stoppage is not a destruction of reality, but it is a directing of reality. Were it just reality that we wanted, any reality rather than some particular sort of reality, we could go on with the stream allowing it to dash our heads against the rocks, and our place would be taken by the more fortunate. But if we would direct reality, we must stop the process. It is in this moment of stoppage that we set up the permanent space. We work out plans and patterns in an enduring world that is co-gredient with ourselves. The instant, as employed by science, is not a pictorial representation of the specious present, for the latter is qualitatively variable and has a temporal spread. But the instant answers logically to the specious present as a cross section of change. The question is not, therefore, one of the instant as such which will have no temporal spread. It is rather one of getting a durable hold upon the precarious passage that is essential to the perceptual world. The term "a world at an instant" is an ideal. It is not getting the world to a knife-edge present, but a selection of the permanent. The actual selecting takes the form of manipulating what we have here and now in the laboratory, in the observatory, or in the field of research. This manipulatory activity is obvious in a multitude of guises: of measuring, of reducing the qualitative extent so that one can find simplicity, of finding the limit of series, of formulating *a priori* systems. Even in "pure"

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logic we have rules of operation which may quite as well be called rules of manipulation. In a real sense then, the world in which we are reflectively active is the world that we are handling. The world as an object of knowledge is an extension of the "now" or manipulatory area pushed out, just as Newton extended the falling weights, the swinging pendula and the rolling spheres of Galileo to the heavens. This introduction of the future into the now is the establishment of co-grediency, and the stoppage represents the relation of the co-gredient objects to the percipient event. The distant or promissory character changes to simultaneity. Time is eliminated, and with static objects of knowledge we build an hypothetical world in which the *objects stand to each other in a logical rather than in a temporal relation.* It is only in a world made up of static instants, moments, or "nows" that we can have a mechanistic universe. But this is not the real world, although it is part of the modern world. It is a real hypothesis for prediction and control. In short, the manipulatory area represents the world of things which on the one hand have ceased to be merely stimuli to immediate action, and which on the other hand stop short of the consummatory phase. Those things are objects of knowledge. When the physicist leaves his instruments in the laboratory and returns home to become a domestic animal, the beefsteak that he eats is not a swarm of atoms. It is no longer a *means* of chemical analysis; it is an *end* of human endeavor.

After all, it is the world that we see, smell, and hold that we wish to control. And science must come back to this perceptual world. The hypothesis must be brought back to experimental data. The theory of an electron causing the saltatory motion of oil between two electrodes may or may not be substantiated on further test. But the oil is "there" in experience and does not need to be referred to consciousness. If the theory is discarded, the oil will remain over to become the basis of, or to be taken into account by, another theory. In immediate experience we are not presented with abstract universals or with mutually independent particulars. In the attempt to return to the world the perceptual goods which had been purloined from it, the realist has with surprising generosity returned much more than was taken away. Thus Mr. Russell loads the penny with an infinite number of characters, shapes, etc. It is no longer an object but a clutter of renovated states of consciousness.

The realist is seeking a content that is identical in all relevant perspectives, i.e., irrelevant to any standpoint. If I may change the illustration of the penny to one that suggests problems a little less trivial, whether we are talking of pennies or of dollars we must say that wealth, for example, as a separate entity is non-existent. But

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the scientist is not asking what is the reality of, or back of, perspectives; he is showing the means of change, exchange, or translation between them. If we ask what we mean by a dollar we get a Fisher dollar, a wealth of dollars in wheat, or credit on books. We get a formula of translation. When we get to the reality, we get it in terms of consummations, whereas the realist seeks reality in an object outside the perspective. So far as we have a common object we have a common perspective, or an intersection of perspectives. For example, we say that the same thing has different values in different situations, or we say that a thing has one motion in one frame of reference, and another in another frame. What is the meaning of this "same thing that is different"? Is there implied an Aristotelian substance or unity and its accidents? Apparently it is out of some such identity that the realist would create his absolute world in which there is a distribution of perspectives; and also there is an insoluble problem of their relation to the absolute. The statement of what a thing is must have a reference to the point from which we start. There is no reality-in-general, or statement-at-large of an absolute. To seek such a statement is to seek a relation that is paramount, a *sumumgenus*. Such a conception lapses because since medieval times we can not find any such paramount relation. We do not find given in nature an absolute time and space. The setting up of these paramount relations, religious, physical, and what not, has been social and of the essence of myth. Of course, it is a simple thing to take one's own attitude as the absolute world. The sense in which a thing is said to be the same entity having different values, or is said to be the same entity in different perspectives, is not a relation of substance and accidents, but is the sense in which a thing in one perspective can be translated into a thing in another. The world as relative occurs in the perspective of the individual. But one does not surround his own perspective by an absolute world when he relates it to another.

We have all felt the egotism of other people who were unable to suppose that there are more things than ever occurred in their limited experience. But the significance of the disapprobation in the term "egotism" can not be very forceful if it means no more than that an acceptance of our attitude in substitution would be an achievement of the absolute. We can not expect anyone to act intelligently about anything with which he has had no contact in any fashion. The exhortation, then, is toward open-mindedness and an outlook for exceptions which are characteristic of a scientific attitude. Larger perspectives may be achieved, but not the absolute, unless we have recourse to "self-evident intuitions" or to some other form of dogma. An experimental or scientific attitude will

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not give it to us. Thus Mr. Whitehead says "I do not hold Induction to be in its essence the derivation of general laws. It is the divination of some characteristics of a particular future from the known characteristics of a particular past. The wider assumption of general laws holding for all cognizable occasions appears a very unsafe addendum to attach to this limited knowledge."[6] Much as Hobson points out,[7] the scientist is interested in formulating some order between things perceived, without questioning what is back of them in any ontological sense. It is significant that scientists do not frequently argue as to whether or not things exist corresponding to scientific objects, but whether or not such scientific objects are fruitful. On that basis scientific objects are used or dropped. The objects of science are thus essentially functional, and hence suggest that the theory of knowledge be stated upon this relativistic basis. The difficulty that I find in carrying this out upon the basis of Mr. Whitehead's philosophy is that for him "objects" are antecedently in nature *as objects*. They are absolutes by which he hopes to guarantee the order of nature. Man has long sought to find security in nature by putting some socially achieved object at the bottom of it to insure its conformity to human wishes. Were it not for God, or laws, or objects of some sort guiding nature along the straight path of order, nature would soon become chaotic. But there is in fact nothing to guarantee that any given problem, if it is really a problem, will be solved by the means at our disposal. To cease the search for such a guarantee will not avoid all metaphysical problems. But it will avoid many prolix and dubious metaphysical speculations that have no other justification. Objects are social achievements. They are not things that make nature go. They are things that enable a human organism to act in some fashion more effectively with regard to some observable things in nature. I would not even deny that an end of knowing may be to perceive order in nature. But it should not be overlooked that when the end of knowing is reached, then knowing is ended.

Things that occur in the experience of one individual differ more or less importantly from those that occur in others. On this basis many have said that all experiences are absolutely esoteric. It would seem, however, that the social mechanism makes possible the selection, presentation, and entry into experience of several individuals, certain definite and relatively common objects. And these common objects make up the perspective common to that group. The participation of the thing in the "universal Idea" or in the common world is social and it represents the relation of the thing

[6] Whitehead: *Science and the Modern World*, p. 65.
[7] Hobson: *The Domain of Natural Science*, p. 453.

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to the common world, which is an organization of perspectives. In contrast to this, the difficulties and hopes of ancient speculation lay in the magic of a metaphysical participation. The physical science of that world had as its technique congruencies—geometry—which were brought within the manipulatory area naïvely as a matter of course. Thus the distance-perspective was ignored. This physics, however, was adequate for their mechanics. Problems of the heavens, etc., were thought to be solved if they could be resolved to geometrical forms. It is significant that those *forms* were not our *concepts* which refer to the individual, but were the essence, nature, and reality of the thing. Patent rights and copy-rights, so far as they emphasize that the Idea is the property of the individual rather than of the group, would have been an anachronism. Thus they came back to a dialectical content which endured, for a statement of fundamental nature or ultimate reality. Ancient thought could find validity and reality only in that which was universal. Thought, then, had to see through the peculiarities of the individual to the universal. Because of this lack of attention to particulars, they could not criticize their perspective and had no competent *control* over methods of observation.

Modern man does not find reality in his hypotheses, but in his perspectives. "Data do not implicate persistent structure. They appear first of all as exceptions."[8] The "common world is continually breaking down. Problems arise in it and demand solution. They appear as the exceptions to which I have referred. The exceptions appear first of all in the experience of individuals and while they have the form of common experiences they run counter to the structure of the common world. The experience of the individual is precious because it preserves these exceptions. . . . They are the data of science. If they have been put in the form of common experiences, the task appears of reconstructing the common world so that they may have their place and become instances instead of exceptions."[9] In so far as we date things of our common world, in so far as we seek the source of an idea, we must come back to the individual simply because what escapes the individual escapes knowledge. Facts are bits of biography. They get into the form of common experience only in so far as the individual reports them. As a theory progresses in acceptance, we no longer isolate out parts as biographical bits as such. They become merged in the timeless monotony of textbooks that misleads elementary students of physics, as well as some learned philosophers, into

[8] Mead: "A Pragmatic Theory of Truth," *University of California Publications in Philosophy*, Vol. 11, p. 70.

[9] *Ibid.*, p. 85.

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thinking that truths have no histories. The scientist comes back to what he terms experimental data. From this he constructs the formula or universal law. The disorganized "data" become organized "objects." Here he reaches the goal, perhaps, of ancient thought. But ancient thought was not willing to recognize the instrumental nature of the universal in relation to the individual experience.

Following the pragmatic doctrine, we are attempting to "put" reality into the perspectives of the perceptual world and to see what it becomes in the process. We find that we must state the perceptual world in terms of things—physical, psychological, legal, geological, economic, etc.—that get their reality in the manipulatory area. As far as the distant thing lies beyond our reach—beyond the manipulatory area—it is hypothetical. If what it promises is not born out in the manipulatory area, it is illusory. And the manipulation signifies what we do in terms of the "promise." The worlds of the telescope and of the microscope are not greatly different from this. They are very much as if we were at the top of a sky-scraper looking down upon the little "ants," and taking them as if they were human beings of our own size. In the spatio-temporal world this reality lies ahead. If we go down the elevator we are "promised" association with individuals like ourselves. But it may be inconvenient to go down. By reflection we bring the reality up into the now. We want to know what will be the consequences of an act which we may undertake—we state the world in such a fashion that our statement will indicate consequences that will be there in experience. The statement is hypothetical in that it is yet to be tested. But it is nevertheless a readiness to act, which doubtless would not exist with regard to the case at hand without reflection. It is an attitude of adjustment of the individual, properly called his consciousness, and is in terms of his acts. And the distant object makes explicit the hypothetical realities in so far as it answers to the responses of the organism. It is to be noted that what answers to "hypotheses that guide us truly" is not a "rational order" that mirrors the dialectic of our thinking; whatever "answers" are observable existences in nature that are denoted by the conclusions of the hypotheses. These explicit realities lie not in a transcendent world, but appear in the perspective of the individual. They are there in their own right, and do not need to be referred to consciousness.

LEHIGH UNIVERSITY. THEODORE T. LAFFERTY.

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## SOME EARLY HOLISTIC PSYCHOLOGISTS

IT has been said that it is always perilous to attempt to assign an exact origin for any scientific idea, because when we think that we have traced its history back to a dark age that must surely have marked its inception, we shall still probably find that if we go back but a little further, and again a little further, the previously assigned origin does not seem to be so definite after all. The idea does not appear to have sprung, Athena-like, out of a placid background, as we may have first thought. Its roots lie buried in a soil that is very, very deep.

That the doctrines of the Gestalt school of psychology took root in a reaction to the elementarism of associationism is probably true enough, as is also the fact that a very outstanding contribution to this reaction is to be found on the part of those defenders of *Gestalt-Qualitat*, Ehrenfels, Meinong, Witasek, and others. Their rumblings of dissatisfaction with the associationist view were first heard in the last decade of the nineteenth century. Their refined experiments, and their racial connections, undoubtedly were very influential in stimulating their German confrères to formulate a Gestalt psychology, and perhaps they were the most important single factor in this regard. But they can hardly be said to be either the first or the most important psychologists to appreciate the deficiencies of an elementaristic psychology. Associationism has had many severe critics during its long tenure of dominance.

We might mention Herbart, who was too early on the scene to be an avowed critic of English associationism, as an outstanding contributor to theoretical psychology with a view of mental functioning that was far from being mechanistic. In his doctrine of "apperception," he gave very high place to an active reception of an idea by the mind, implying that this was not simply a process of addition or conglomeration. It made all the difference in the world whether the mental background, his "apperceptive mass," would really be willing to receive the new idea, in respect to its conformity, in order for that idea to gain a mental or conscious status. It must be assimilated to a totality of conscious ideas before it gains any recognition. Mechanistic laws of association such as those of primacy, recency, contiguity, and so forth, could hardly gain for themselves much consideration from this point of view. There was here definitely an emphasis upon the "wholeness" of the mental content, and its determination of the significance of the elements, rather than that the elements were prior and by addition and complication built up our consciousness.

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Even within the ranks of associationism itself we find evidence of the appreciation of the fact that there must be something else to the genesis of mind besides the mere agglomeration of elementary sensations and simple ideas. John Stuart Mill, for one, propounded his doctrine of "mental chemistry" to take care of the exceptional cases. As water is a new substance, with properties different from the oxygen and hydrogen of which it is composed, so sensations and ideas may combine to give rise to a mental content, whose qualities and properties could not have been predicted from the components taken individually or in simple addition.

A similar qualification of the doctrine of association came from the mind of Wundt in his principle of "creative synthesis." Out of a synthesis or combination of ideas came something that was wholly new or "created." His further law of "psychic relations" might also be mentioned in this connection: "a psychic content acquires significance from the other contents with which it stands in relation." The important point to be noted here is that of "relation" as opposed to that of mere contiguous context. He employed this principle in connection with the Weber law, which he interpreted in a wholly psychological manner: "a judgment of the amount of difference between two sensations is proportional to the magnitudes of the sensations" and not of the stimuli directly. In other words, a mental content gets its significance from the background that is there to receive it. This is an emphasis placed upon the "whole" of mental experience. Wundt, furthermore, made room in his psychological theory for an "active apperception," as well as a passive association.

Kulpe, in his *Outlines of Psychology,* is also critical of the doctrine of association in its more mechanical features. His remarks constitute a further step toward a clearer formulation of the factors in mental functioning that had been ignored by the classical associationists and brought into strong relief by the mental "holists." He says (page 189): "The strict school of association requires that every reproduction be brought about in the same way . . . [but] . . . there are two experiences which appear irreconcilable with this requirement. The first is direct reproduction, or the spontaneous origination of ideas, which is usually met by the assumption of unnoticed or unconscious connective terms. . . . But this is an open question.

"There is another experience, the indisputable occurrence of indirect recognition without any precedent association of the reproduced and reproducing ideas . . . without any previous implication in an associative connection of the conscious processes concerned. We do not come with vacant minds, helpless and heedless, to the

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reception of new impressions. . . . [Furthermore] a painting, a musical composition, a landscape, may be effective as a whole to produce centrally excited sensations; and it can not be asserted that in every case certain individual factors of the total impression have formed the starting point of reproduction.

"Psychology can not say absolutely, even of perceived impressions, that they remain the same in spite of changes in time and circumstances." In other words there is a relativity in the significance of impressions, depending upon the mental background. The "element" is hardly an invariable thing of definite and explicit content.

Kulpe criticizes the mechanical principles of contiguity and similarity and implies that they are not the explanation of bonds between ideas, but that they are merely statements "after the fact," and that some more engrossing mechanism is responsible for their union. "A favorite instance of reproduction by similarity is the suggestion of a person by his picture . . . but in all such cases recollection only takes place if we already possess a knowledge of the significance of picture and photograph; . . . the knowledge that what we have before us is simply a copy of an object, will guide reproduction. . . . The similar does not recall the similar, but has the same effect as the similar, i.e., reproduces the same words, ideas, etc. . . . Two impressions stand in the same relation to a third. . . . Similarity and contrast are capable of quantitative gradation. Now if similarity and contrast are put forward as incentives to reproduction, we should expect that their degrees would be referred to as affording a quantitative determination of their reproducing power. . . . [But] the literature of association is silent upon this point."

In summary of his criticism, he says: "Association has often been interpreted as a causal link between ideas. Herbart has employed it in this sense for the construction of a real mechanics of ideas and their relations, their rise and fall. . . . But if the associated ideas are dependent upon cerebral conditions, we need not assume a particular causal connection between the ideas themselves. . . . Lastly the association psychology, as a rule, takes no account of the marked influence exerted upon reproduction by temporary mood, direction of the attention, etc., by general and special conditions of a central nature." The two important factors that Kulpe has emphasized, and that most associationists have ignored, in the theory of mental functioning, center around the facts that many impressions gain their value and significance from central factors, tendencies, moods, attention, background, etc., and that the reproduction of ideas must be referred to larger mental factors in the

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background than the superficial connections, such as contiguity and similarity, that might exist between the elemental ideas themselves.

Of the American psychologists, James was perhaps the most outspoken of the early writers to appreciate the deficiencies of the associationist doctrine. His fulminations in particular were directed against the notion that a perception was merely the result of a combination of simple sensations, or a combination of an impression with a fringe of mental images. "A perception is not a sensation plus a lot of images from the past, but it is one state of mind. . . . Sensation does not form an independent constituent of the perception." There is "form" furthermore in our perceptions and not mere agglutination. "All brain processes are such as give rise to what we may call figured consciousness, . . . not mere hodgepodges of elements. . . . We react to a sensation in a determinate and figured fashion if possible and in as probable a fashion as the case admits. . . . Psychological concepts alter by being used." The "figuring" of consciousness and the reaction to objects in accord with background and experience are ideas that would place James definitely among the "mental holists."

In his chapter on "Discrimination and Comparison," James elaborates upon his notion of how the mind develops, and it is here in particular that we see him as a clear-thinking precursor of the Gestalt viewpoint. It is not, according to James, by association alone that the mind lives and has its being, but that discrimination, or "particularisation" as modern Gestalt psychology would term it, is an outstanding contributor to mental development.

"The truth is that experience is trained by both association and dissociation, and that psychology must be writ in both synthetic and analytic terms. . . . The simple impression of Hume, the simple idea of Locke are both abstractions, never realized in experience. Experience from the very first, presents us with concreted objects, vaguely continuous with the rest of the world which envelops them in space and time, and potentially divisible into inward elements and parts. These objects we break asunder and reunite."

Anent the positive combination of simple impressions in building up our mental content in a mechanical way, as the associationist view would have it, he says: "The undeniable fact [is] that any number of impressions, from any number of sensory sources, falling simultaneously on a mind which has not yet experienced them separately, will fuse into a single undivided object for that mind. The law is that all things fuse that can and nothing separates except what must. . . . Although they separate easier if they come in through distinct nerves, yet distinct nerves are not an unconditional ground of their discrimination."

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The idea of space is not, according to him, an agglomeration of all the little spaces that come to us through the various avenues of differing sensory experience, but that it is a global, massive, (if vague) thing right from the first. 'The baby assailed by eyes, ears, nose, skin, and entrails at once, feels it all as one great blooming, buzzing confusion: and to the very end of life our location of all things in one space is due to the fact that the original extents or bignesses of all the sensations which come to our notice at once, coalesced together into one and the same space. There is no other reason than this why 'the hand I touch and see coincided spatially with the hand I immediately feel.' "

Our mental content does not apparently contain the classical elementary impressions in an actual but well-concealed state. That our first unanalysed sensation was really composed of these elementary sensations "is nothing but the fatal 'psychologists' fallacy' of treating an inferior state of mind as if it must somehow know implicitly all that is explicitly known about the same topic by a superior state of mind. The thing thought of is unquestionably the same, but it is thought twice over in two absolutely different psychoses—once as an unbroken unit, and again as a sum of discriminated parts. It is not one thought in two editions, but two entirely distinct thoughts of one thing. And each thought is within itself a 'continuum,' a 'plenum,' needing no contributions from the other to fill up its gaps."

From out of the first vague, undifferentiated whole of mental content, we discriminate the things that are later on to be known as elements. The elements, then, are secondary, and not primary. The elements that we arrive at finally, and the nicety of the discrimination will depend upon the extent to which the process has been carried. We all may differ, as individuals in this, and our elements, accordingly, will depend upon what has gone on within each of us personally up to a certain time. "We all cease analysing the world at some point, and notice no more differences. The last units with which we stop are our objective elements of being. Those of a dog are different from those of a Humboldt; those of a practical man from those of a metaphysician. But the dog's and the practical man's thoughts *feel* continuous, though to the Humboldt or the metaphysician they would appear full of gaps and defects. And they are continuous, as thoughts. It is only as mirrors of things that the superior minds find them full of omissions. And when the omitted things are discovered and the unnoticed differences laid bare, it is not that the old thoughts split up, but that new thoughts supersede them, which make new judgments about the same objective world."

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When James speaks of a "felt difference" between things without the consciousness of the individual differing elements being necessarily presupposed, we of the present day are reminded of the "configurations" and the "gradients" of Gestalt psychology. That we can be conscious of movements in time or space, or of gradients up or down a scale, without at the same time being aware of the elements or steps of which the scale is composed, or of the individual objects that are being moved, is not such a far cry from the contention of James that differences may be felt, and that a time series may be directly perceived as such, without any discrimination of the elementary objective moments, or things that are at the basis, in the real world, of the time series, or of the perceived difference. "We are forced to deny that differential discrimination can everywhere be reduced to the mere ascertainment that elements present in one fact, in another fail to exist. . . . The difference, thus immediately felt between two terms, is independent of our ability to identify either of the terms by itself. . . . Even inferred differences all end in a direct intuition of difference somewhere."

Even when the elements are discriminated to some extent, their significance depends upon the series in which they are found, and not upon any absolute value that may accrue to them of themselves. "As our brains and minds are actually made, it is impossible to get certain m's and n's in immediate sequence and to keep them pure. . . . In addition to being felt at the brief instant of transition, the difference also feels as if incorporated and taken up into the second term, which feels 'different-from-the-first' even while it lasts. It is obvious that the second term of the mind in this case is not bald 'n,' but a very complex object: and that the sequence is not simply first 'm,' then 'difference,' then 'n'; but first 'm,' then difference, then 'n-different-from-m.' " So much for the "elements" as discrete mental entities, and their dependence upon their setting.

James offers a suggestion as to what he thinks of the manner in which the "elements" come into being. They are analysed out of the total, undifferentiated first state, and experience brings this about by setting off these elements in varying backgrounds, so that they eventually stand out of their own accord, or due to their claim upon an independent real existence. Experience of an element in many and varied situations is a condition *sine qua non* of its emergence. "Any total impression made on the mind must be unanalyzable whose elements are never experienced apart. The components of an absolutely changeless group of not-elsewhere-occurring attributes could never be discriminated. . . . What is associated now with one thing and now with another tends to become dissociated from either, and to grow into an object of abstract contem-

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plation of the mind. One might call this the law of dissociation by varying concomitants. . . . Where a distinction has not practical interest, where we gain nothing by analysing a feature from out of the compound total of which it forms a part, we contract a habit of leaving it unnoticed, and at last grow callous to its presence."

We may take as James' parting shot at associationism that "it is not ideas that are associated, but things." The mental reaction to things is the important factor, and not the mere registration of simple impressions, or even their addition and complications. If we but changed his terminology in a few instances to accord with that of the modern configurationist school, his statements could very easily masquerade as promulgations of the Gestalters.

Since American and English psychologists very early and very avidly seized upon the neurone theory of neurology, and the reflex arc concept in its functioning, to give a physiological basis for their doctrines, it is interesting to take an example of the reaction against this tendency, and to consider how it breathes defiance of the classical theory on the one hand, and previsions the configurationist view on the other. Dewey, in an article in the *Psychological Review* of 1896, on the "Reflex Arc Concept in Psychology," had much to say to the point. He inveighs particularly against the independence of the elementary sensation, and stresses a larger, organismic factor in giving both the sensation and the reflex their significance.

He says: "The reflex arc idea, as commonly employed, is defective in that it assumes sensory stimulus and motor response as distinct psychical existences, while in reality they are always inside a coördination and have their significance purely from the part played in maintaining and reconstituting the coördination." The status of the individual prior to receiving the stimulus can not be irrelevant either to its quantity or quality. That the stimulus should reach the individual through a particular sensory avenue, furthermore, does not imply that all the sensory centers do not contribute to the setting and the total effect. "It is absolutely impossible to think of the eye center as monopolizing consciousness and the ear apparatus as wholly quiescent. What happens is a certain relative prominence and subsidence as between the various organs which maintain the organic-equilibrium." In other words, the reflex response is not a particulate response to a definite stimulus, but it is the reaction of the whole organism to a certain feature emerging from a total background of sense-qualities. We need only to include the word "configuration" in such a statement to make it perfectly good orthodox Gestaltism.

"What we have is a circuit, not an arc or broken segment of a circle. . . . Indeed the movement is only for the sake of determin-

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ing the stimulus, of fixing what kind of a stimulus it is, of interpreting it. . . . What precedes the stimulus is a whole act, a sensori-motor coördination. What is more to the point, the 'stimulus' emerges out of this coördination; it is born from it as its matrix; it represents as it were an escape from it. . . . In the physical process, as physical, there is nothing which can be set off as stimulus, nothing which reacts, nothing which is response. There is just a change in the system of tensions. . . . It is an act, a sensori-motor coördination which stimulates the response, itself in turn sensori-motor, not a sensation which stimulates a movement.

"The sensation or conscious stimulus is not a thing or existence by itself; it is that phase of a coördination requiring attention because, by reason of the conflict within the coördination, it is uncertain how to complete it. . . . Sensation is simply a *function* and will have its value shift according to the special work requiring to be done. . . . What the sensation will be in particular at a given time, therefore, will depend entirely upon the way in which an activity is being used. It has no fixed quality of its own. . . . The stimulus is that phase of the forming coördination which represents the conditions which have to be met in bringing it to a successful issue; the response is that phase of one and the same coördination which gives the key to meeting these conditions, which serves as instrument in effecting the successful coördination."

In these statements we find an appreciation of the organismic view in modern psychology, and an expression of the reaction against the notion of the unalterability of the sensation or its value. Both of these have been stressed of late by the Gestalters.

Dewey became known as a "functionalist," because of his expressed views. Another functionalist who had something to say in criticism of the associationist viewpoint, was Stout, in his *Analytical Psychology*, published in 1902. "The fundamental fallacy of the associationists lies in their bias towards psychological atomism. . . . From this point of view the parts must be supposed to pre-exist in such a way that they need only to be in some undefined manner externally brought together or associated in order to constitute the whole which contains them.

"From this primary fallacy flow three derivative errors. The first is the exclusive emphasis it lays upon mere combination. As against this view, we advance the counter-proposition that every new synthesis results from the further determination of a psychical whole which in some way already pre-exists. The new synthesis consists in the distinction and definition of the parts and relations within this prior whole. . . . In the second place, there is a complete failure on the part of the associationists to recognize the ap-

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prehension of 'form' of combination as a distinct psychical element. . . . Finally the associationist has a strong disposition to regard mental elements as entering new combinations without themselves undergoing transformation in the process. This never is and never can be true. Elements which enter into a new whole, receive new qualifications from their relations within this whole."

While these views of Stout would probably not come so close to receiving the imprint of orthodoxy at the hands of modern configurationists as those of James, still we can make out a definite trend or tendency in them if we place in opposition the associationists on the one hand and the Gestalters on the other.

One might think offhand that he could turn to the more humane, generalizing, "tender-minded" mentality of the French for qualifying nuances that would bring an associationist doctrine more in line with these tendencies, and eliminate much of its "tough-minded" mechanism. He would probably be rewarded in many instances, as he certainly would be in reviewing Piéron's discussion of mediate association, appearing in the *Révue Philosophique* for 1903. He says that English associationists are too mechanical, for behind the mechanical laws of association are to be found more fundamental laws of personal consciousness and psychic activity in general. The importance of these general factors are not to be overlooked.

In giving an example of the association of ideas in a dream, or during distraction, he says: "An idea acts upon the subconscious domains and tends to drive out of it an element, but this element arouses another idea, etc., which is more interesting and more attractive to the *personal synthesis;* the last only appears in consciousness." The general factor of relatedness to the whole personality, or mental background of the moment, would then appear to be the determining factor in the arousal of ideas, and not hypothetical mechanical bonds formed between the ideas themselves. There is an implication of "wholeness" here from which the idea emerges and by which it is accepted.

Piéron criticizes experiments in association because the conditions are too artificial, forcing the associations or using nonsense material, and he says that for the most part they are conceived in "accordance with the general prejudice that ideas are joined together like links in a chain." In the normal functioning of the human mind, these forms of association are extremely rare. Most associations are those of parts of a same whole among themselves or with the whole. A tree and a stream are often associated because they are parts of the same country-side. On this basis, all association by contiguity is mediate, particularly in ordinary life.

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The association is mediated through reference to a larger whole, an underlying background, or a personal act of synthesis. In his stress upon the relation of the "whole" to association, we should place Piéron definitely on the side of the mental "holists."

It would not be an easy matter to say that the views given expression to here were in the direct line of descent that gave birth to the modern configurationist viewpoint in psychology, nor a safe one. We never know just how much a person owes in his own mental development to those who have preceded him, and whose thoughts he has either come into contact with directly through writings, or absorbed unconsciously from his scientific background. But we should probably not wish to deny that the men whose views have been quoted here had at least this much in common with the modern proponents of the configurationist viewpoint: they felt that they were impelled to express themselves as opposed to a too elementaristic and mechanical view of the human mind. Their positive contributions have not always shown the same trend, but wherever they are clear in their ideas, they seem to agree in demanding a more organismic, phenomenalistic, and "holistic" approach to the study of psychology.

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## BOOK REVIEWS

*The Contemporary and His Soul.* Irwin Edman. New York: Jonathan Cape & Harrison Smith. 1931. Pp. vii + 191.

In summing up the philosophy of disillusionment, Edman writes: "The cure of the cult of disillusion, in so far as it is something more than the plaything of verbal sophisticates, is not by argument, but by social transformation. Not a new argument but a new society will cure the soul of man." It sometimes seems as if this must be the final word. The trouble with the soul of man to-day is not that it suffers from a confusion of ideas and beliefs—that it has no clear philosophy, but, far more deeply, that it has no man-sized job. The Time Spirit seems to have placed us in a period where, all equipped with the best science and the best intentions, we have nothing to do—nothing that is great enough to evoke an enthusiasm and enlist a complete devotion. Hence the various retreats—into the despair (and sweetness) of disillusion, into timeless essences, into a romanticized past, into a dogged, mind-shattering sensualism. "Disillusion," writes Edman again, "does not occur where there is animal satisfaction, creative absorption, or civic fulfillment. The satisfied

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animal, the working artist, and the enterprising citizen are three types of beings who have not the capacity for disillusion. But sensuality and enterprise have both become difficult for the modern, and artistic creation in this, as in any age, is possible only to a few."

Edman's analysis of the various ways of retreat from reality is masterly. And yet one is brought to reflect. When the philosopher has done all this analyzing, whom has he convinced? Not the disillusionists, for disillusion is their one claim to significance; it is their dear joy. Not those who fly to the timeless essences. Why do they fly? Because the transient for them is so completely self-defeating. Not those who pack up their intellectual goods and take their departure to the long distant past. Why do they depart! Precisely because they can not find in the present that sense of glory which seems once to have been in the world. Not the sensualists, for they—Hemingwaywise—are too occupied with their meaningless sensualities even to look into a book—and that book one on philosophy. What one must conclude, then, is that this philosopher is writing his own *apologia* for not doing as these others do. And he is heartening the rest of us who have retained a kind of sneaking notion that there are values here and now that may be cultivated without evasion or a blush of shame. Also, no doubt, he is writing for those wavering ones who are almost disillusioned, almost ready to escape to some ivory tower of essences or sensualism, but who are waiting for a possible word of illumination that may enable them to make a final, wise decision. For the last named, this book will be of very great value, for it sets out the various self-defeats of those retreating ways of life with an utter clarity and points the way to vigorous participation in the life situation.

But one returns inevitably to the major consideration. The trouble with the world to-day is—the world. We live in environments that do not easily arouse enthusiasm and absorption. Certainly to be asked to function as a citizen to-day is not highly inspiriting. The young people shrug their shoulders and reply: "What's the use?" The older ones sigh and return to the stock reports. Even to function as a business man would seem hardly to provide for an ardent, self-dedicated life. Business is still the rather low-geared, hard-boiled process that we know it to be, and one goes into it—if one does—as part of the grim necessity of making a living. Religion has faded into a weak request that it be permitted to continue tax-free. Art is the province of the aberrant and the queer. The theater, firm in the hands of the box office, devotes itself to the adolescent mind. Music is increasingly for the crooners and the saxophonists.

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And philosophy? A good deal of it—of the academic kind—is to be found joining Edman's retreaters—particularly those who retreat to eternal essences and to the past. What is philosophy to do to-day? A very penetrating analysis of this book would seem to point in this direction: The need is for a kind of world that enlists enthusiasm and devotion, and the philosopher is to be a leader in generating that world. Plato busied himself with thoughts of an ideal Republic. Is not the philosopher's task to-day to set himself to this central problem, the problem of organizing an environment that will evoke the ardent devotions of men. The nearest that we have come to this, it seems to me, is in the work of John Dewey in reconstructing the school life of children. Here is a case where a philosopher, recognizing the self-defeat of the prevailing childhood environment, set himself to think out—and to work out—a more vitalizing environment. Is it possible for the philosopher, in the same way, to think out—and to work out—more vitalizing environments in business and citizenship and social life? John Dewey effected a kind of revolution in the world of childhood. Is it possible to effect a kind of revolution in the world of adulthood? One thinks at once of the movement—just beginning to take shape—of adult education. Is there not here a promising field for the philosopher? And one thinks particularly of that striking episode in European history, the actual transformation of adult life in Denmark through the work of Grundvig and the adult schools.

The vigorous call of this book is to participation in and reconstruction of the life that is. "So far from regarding nature as anything hostile or alien or absurd, as was the sentimental fashion of the nineteenth century, or such echoes of it as we find in Bertrand Russell or Aldous Huxley or Joseph Wood Krutch's *The Modern Temper* in the twentieth, we are inclined to regard it as being, like Jehovah, *that* that is. And what it is is the matrix and material of all our ideals and the locus of all possible destinies." "A truly radical revolution," he goes on to say, "would be one that envisaged the whole of life as the material and procedure and the field of art where the enjoyment and the activities of art were universalized, where work had meaning and enrichment for those who performed it, where amusements ceased to be trivial and labor ceased to be vain." It is to the acceptance of the world as matrix and possibility that the call is made in this book. But the philosopher, as Edman's analysis seems to imply, will have to do more than argue about it. He will have, like the maieutic Socrates, to do some helping of the new world into birth.

College of the City of New York.

H. A. Overstreet.

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*A Crusade for Humanity: The History of Organized Positivism in England.* JOHN EDWIN MCGEE. London: Watts & Co. 1931. viii + 249 pp.

According to Professor Carlton J. H. Hayes, with the aid of whose advice this book was written, it "fills a notable gap in the literature of the subject, and provides such a sound and well-documented history as to obviate the need of anyone else's doing the thing again." If the "thing" in question is a laborious compilation of the facts about Positivism as an organized religious movement in England, Professor Hayes is quite correct, and Mr. McGee deserves our unstinted thanks. But while the social historian may rest content, the student of the psychology and philosophy of religion will continue to hope for a more vivid description and a more penetrating interpretation of English Positivism than is here supplied. We can get along without an up-to-date fictional dramatization; but can not someone make us understand how it felt to be a Congrevian or a Harrisonian Positivist in those far-from-gay London 'nineties! How much did the Comtian prayers and sacraments mean to all the men and women Mr. McGee has so painstakingly catalogued for us! Why did religious (although not ecclesiastical) Positivism appeal so strongly to a Frederic Harrison, and not at all to a Harriet Martineau? Religions, even humanistic ones, are of acts and feelings all compact, or else they are very little. Names and dates, minutes and resolutions, all these are valuable as matters of record, but they are little more than raw material, in their present form, for a thorough understanding of Positivism as a living religion in England and elsewhere. Can it be that uninspired religions attract only uninspired historians?

To accomplish the larger task of interpretation, one would have to begin with a profounder study, not only of the nature of religion in general, but of Positivism as a philosophy and of August Comte as a personality, than is evidenced in the volume under discussion. In his introductory chapter on "The Religion and Its Founder," Mr. McGee gives nothing like an adequate exposition, even for a purely historical account, of the manifold sources of Comte's ideas; of the personal traits which so vitally affected the formulation of the Religion of Humanity; of the admiration for the Middle Ages (learned from Saint-Simon) which explains so much of Comte's "Catholicism"; or of the schism among his French followers provoked by the influence of Clotilde de Vaux and the alleged "second career,"—to mention only a few essential factors. And concerning the author's estimate of the "Significance of the English Positivist Movement" in his concluding chapter, the fact that he limits it to eight brief pages is eloquent beyond any possible criticism.

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There also appears to be little within the covers of the present history to justify its rather dramatic title of "A Crusade for Humanity." Whatever crusading spirit may have animated the more ardent of the English Positivists in the early days of the movement, it soon evaporated into something far too dignified and well-bred to be associated with even the tamest of the Crusades. Mr. McGee advances as its central theme the idea of conciliation and compromise, than which no notion lends itself less readily to crusading purposes. The life-blood of evangelism is over-emphasis, and not even the saints of English Positivism could manage to over-emphasize the idea of avoiding over-emphasis. They took perpetually the middle ground,—between science and religion, employer and employee, aristocrat and democrat, feminist and anti-feminist, imperialist and little Englander. That is to say, they annoyed everyone, in a century of bitter conflict, by finding some good and some evil in every idea presented. As a result they could look for recruits only among that minute minority of the human race who were passionately interested in nothing but impartiality and balanced judgment.

But if English religious Positivism was hardly a crusade, it was nevertheless an instructive attempt to construct a religion from materials which were almost equally compounded of philosophy and pathology. Many of the latter aberrations, traceable to Comte's desperate sublimation of his passion for Madame de Vaux, were quietly dropped in the process of crossing the Channel and so ceased to handicap the new religion in its appeal to British common sense. But even without a great deal of Comte's rigid ritualistic nonsense, it remained too priestly, too papist, and too French to be generally acceptable. The wonder is, not that English Positivism failed, but that it appealed to so many fine minds at the same time that it seemed so utterly ridiculous to others, and was thus enabled to win a few minor successes. These were not, as the author's statements show, in the field of religion, but in controversies over science, history, diplomacy, economics, and politics generally. Even there the verdict too often correctly reads: "As usual, the agitation of the Positivists had no appreciable effect upon the trend of events." Like their rivals the Secularists, Unitarians, and Christian Socialists (to whose interrelations the author should have given more attention), the Positivists saw their mild thunder stolen and their battles won for them by participants in the struggle who were outside their zone of direct influence. So that if organized Positivism has practically disappeared in England to-day, it is partly because so many of the objectives of the English movement have been passed or rendered obsolete by the march of events in the last half-

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century. The more strictly Comtian objectives, it should be noted, are still far away.

None of these criticisms should be allowed to obscure the real merits of Mr. McGee's narrative. He has told in admirable detail the story of the beginnings of English Positivism in the group around Richard Congreve at the evangelical Wadham College, Oxford; of the schism in the sect whose main tenet was concord, whereby the Congrevians were left free to found the Church of Humanity, while the Harrisonians devoted themselves to the School of Positivism; and of the healing of the breach, which has not yet served to ward off the peril of complete extinction. He notes that the passing of Frederic Harrison in 1923 "marked the passing of the last claim which the Positivists had to national attention." In fact the whole history of the movement has been marked by such an enormous discrepancy between the influence of its leaders and the number of its rank-and-file, that a careful study of the lives of Congreve, Harrison, Bridges, and Beesly was bound to make up the bulk of the story. The book contains a list of 487 items of "Materials Consulted," including many circulars and leaflets not easily available. But there is no index.

HAROLD A. LARRABEE.

UNION COLLEGE.

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## JOURNALS AND NEW BOOKS

INTERNATIONAL JOURNAL OF ETHICS. Vol. XLII, No. 3. Objective Values: *H. W. Wright.* Business Ethics: *G. F. Taeusch.* Religion versus Morality according to the Elder Henry James: *R. B. Perry.* The Emergence of the Social Sciences from Moral Philosophy: *Gladys Bryson.* Discussion—The Present Worth of Jesus: *B. E. Meland.*

REVUE PHILOSOPHIQUE. 57e Année, Nos. 3 et 4. La Philosophie des Mathématiques selon M. Emile Meyerson: *L. Lichtenstein.* L'Urphaenomen dans la pensée et dans l'oeuvre de Goethe: *G. Bianquis.* Aperçu sur les positions des problèmes de l'action: *G. Hostelet.* Les croyances et les hallucinations: *P. Janet.*

CRITERION. Any VII, Num. 27. L'Englésia i l'Estat segons Francesc Eiximenis: *P. Martí de Barcelona.* El concepte d'obligacio: *Albert Bertomeu.* Entre la filosofia i les matemàtiques: *Josep Orriols.* L'art de filosofar: *P. Miquel d'Esplugues.* Les directrius filosòfiques d'Antoni Comellas i Cluet, pvre.: *Jaume Sarri.*

RIVISTA DI FILOSOFIA. Anno XXIII, N. 1. La coscienza morale: *P. Martinetti.* La scoperta della coscienza morale nell'etica inglese

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del '600 e del '700: *E. Garin.* Il platonismo cristiano di M. Blondel: *E. Grassi.* La questione di Bruhaspati: *A. M. Pizzigalli.*

Bergson, Henri: Les Deux Sources de la Morale et de la Religion. (Bibliothèque de Philosophie Contemporaine.) Paris: Félix Alcan. 1932. 346 pp.

Buchanan, S.: Symbolic Distance in Relation to Analogy and Fiction. (Psyche Miniatures. General Series, No. 39.) London: Kegan Paul, Trench, Trubner & Co., Ltd. 1932. 110 pp. 2/6.

Dickinson, G. Lowes: Plato and his Dialogues. New York: W. W. Norton Co. 1932. 228 pp. $2.00.

Glanvill, Joseph: The Vanity of Dogmatizing. Reproduced from the Edition of 1661. With a Bibliographical Note by Moody E. Prior. (Series III, Vol. 6.) New York: Published for the Facsimile Text Society by Columbia University Press. 1931. 256 pp.

Hartmann, Nicolai: Ethics. Volume II: Moral Values. Authorized translation by Stanton Coit. (Library of Philosophy.) New York: Macmillan Co. 1932. 476 pp. $5.00.

Hone, J. M., and M. M. Rossi: Bishop Berkeley. His Life, Writings and Philosophy. With an Introduction by W. B. Yeats. New York: Macmillan Co. 1931. xxi + 286 pp.

Katsube, Kenzo: Wilhelm Diltheys Methode der Lebensphilosophie. (Philosophische Studien, herausgegeben von dem Philosophischen Institut der Universität Hiroschima, I Heft.) 187 pp.

Swain, Barbara: Fools and Folly during the Middle Ages and the Renaissance. New York: Columbia University Press. 1932. 234 pp. $3.00.

Wolfenden, J. F.: The Approach to Philosophy. London: Edward Arnold & Co. New York: Longmans, Green & Co. 1932. 236 pp. $2.50.

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## NOTES AND NEWS

We have received a Preliminary Announcement of the 1932 Meeting of the Eastern Division of the American Philosophical Association as follows:

The Annual Meeting of the Eastern Division of the American Philosophical Association will occur at Bryn Mawr late in December. Bryn Mawr College will be the host.

The program will be made up as usual. It is to be noted that the Program Committee was instructed at the last meeting to select papers with the following considerations in mind:

"(1) Scholarly attainment from the standpoint of accuracy and originality, (2) Length—not exceeding 2,000 words, (3) Form,

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style and manner of treatment suitable for presentation to, and discussion by, members of the Division."

Members who have papers to present should communicate at once with the incoming secretary, Professor Harold A. Larrabee, Department of Philosophy, Union College, Schenectady, New York, giving an idea of the subject matter of the proposed paper. It is urged that final manuscripts be in by November 1st. A later announcement will give details of time and place of meeting. Professor Larrabee has been appointed by the Executive Committee to serve as Secretary-Treasurer during my absence in Europe. After June 1st all communications should be addressed to him.

F. S. C. NORTHROP, *Secretary*,
1891 Yale Station, New Haven, Conn.

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TO THE EDITORS OF THE JOURNAL OF PHILOSOPHY:

At the last meeting of the Eastern Division of the American Philosophical Association it was voted to appoint a Committee (to which the undersigned were later appointed by the incoming President) to consider the question of bringing vacancies in Philosophy to the attention of candidates for those vacancies. The incoming President, Professor Spaulding, and the members of the Committee, feel that some action should be taken at once instead of waiting to report at the next meeting of the Association any projects which the Committee may have in mind. The Committee accordingly recommends:

(1) That all colleges and universities expecting to make additions to their staffs in Philosophy be invited to report this fact, and if possible the nature of the vacancy, to the Chairman.

(2) That all candidates for positions in Philosophy forward their names and addresses to the Chairman of the Committee. The candidates will then be promptly informed of what vacancies exist, so that they can proceed to promote their candidacy by whatever means they may choose.

The Committee realizes that there are few vacancies at this time, and also that there are already established methods of filling such vacancies as do exist; but feels that nothing should be left undone that could possibly be of service in the present crisis.

R. B. PERRY, Harvard University,
G. D. WALCOTT, Long Island University,
H. B. SMITH, University of Pennsylvania, *Chairman.*

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**Volume XXIX. No. 2. January 21, 1932.**

A Study of a Philosophy of the Determinate. I. ABRAHAM EDEL.
Animism and Materialism in Whitehead's Organic Philosophy. ALBERT M. DUNHAM.
Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 3. February 4, 1932.**

A Study of a Philosophy of the Determinate. II. ABRAHAM EDEL.
Taking the Causal Theory of Perception Seriously. VIRGIL C. ALDRICH.
Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 4. February 18, 1932.**

A Study of a Philosophy of the Determinate. III. ABRAHAM EDEL.
Report of the Thirty-first Annual Meeting of the Eastern Division of the American Philosophical Association. RUDOLPH KAGEY.
Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 5. March 3, 1932.**

Report of the Eighth Annual Meeting of the Pacific Division of the American Philosophical Association. DONALD CARY WILLIAMS.
On the Logical Positivism of the Viennese Circle. EDWARD B. GINSBURG.
Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 6. March 17, 1932.**

Uniformity and Induction. D. W. GOTSHALK.
Fichte's Conception of a League of Nations. A. C. ARMSTRONG.
Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 7. March 31, 1932.**

Mr. Lewis and the *A Priori:* ARTHUR E. MURPHY.
The Metaphysics of Space and Time. V. F. LENZEN.
Book Reviews. Journals and New Books. Notes and News.

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*Regius Professor of Moral Philosophy, University of Aberdeen*

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All communications to the Editors should be addressed to Professor FREDERICK J. E. WOODBRIDGE, or Professor WENDELL T. BUSH, or Professor HERBERT W. SCHNEIDER, Columbia University, New York.

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# The Journal of Philosophy

## ON PERSUASION

While reading books on logic, one is offered a picture of valid reasoning as a movement from definitely ascertained premises to a conclusion which is strictly implied. Once valid, the conclusion is always valid and for all minds; and the passage from premise to conclusion is obligatory for rational thought. Even if the belief is not certain but probable, the degree of its probability is certain. The procedure is so definite and straightforward that all persuasion of one intelligent being by another should be a relatively simple matter; yet if one turns to actual reasoning, the situation is altogether different. Take a man who held a certain political opinion some years ago, for example, that the Government should intervene in affairs as little as possible. We can imagine that powerful arguments were brought by friends against this position, but with no effect upon him whatever. The facts cited to refute his view seemed to him either unimportant or pointing in another direction. Why is it that the friends could not agree? Perhaps one of the parties to the dispute was thinking irrationally; but it is equally possible that both parties were animated by rational considerations. Here then we have the self-same arguments, convincing to the one side and unconvincing to the other. And now this individual has changed his view; is it because he has gained in experience? Hardly, since all the relevant facts had been called to his attention already; now they seem important to him, when before they did not. And in discussing the matter with new opponents now, he is resorting to the same old arguments which failed to influence him in the past. The facts and the arguments have remained the same but their significance has altered for him. He has "seen the light." There was implicit in his mind some general framework of ideas, outlook, criteria, and this has been replaced by another. Within the former framework, the considerations in favor of government intervention lacked convincing force; within the latter they are to the point. Strict reasoning is therefore seen to be neither strict, nor binding upon all; it operates upon a vague background of ideas not explicitly demonstrable but coming rather as an individual growth.

In speaking of persuasion I do not mean merely the process by which one persuades another; I mean self-persuasion primarily, that is to say, the valid way of building up one's own beliefs.



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Data are not born but made, and they become such according as they fit into the framework, which itself is a set of data forming a pattern. In the beginning data are only elements of experience. It is very rare that an element preserves its original shape; it must be cut and polished, and in extreme cases it may be discarded. Of course, every element has an instinct for self-preservation; it has what has been called a "doxic" character; it asserts itself. Moreover, it tends to reproduce itself; that is, every element is a sign, it possesses certain tentative implications. But elements can not form a community in their brute nature, for they and their progeny conflict with one another. The process of forming a community out of the mob of the elements of experience is one of education, in which each element is induced to modify itself in the interests of the whole. One must not think of these elements as absolutes, or as rigid atoms which can only come into collision with one another; they are fluid, potencies rather than actualities, with no definite nature until after they have entered the community. And their nature is never finally determined, because the community is never finally completed. The heresy of rigid data is at the root of the conception of strict reasoning.

But to deny that data are rigid is not to assert that they are absolutely indeterminate, to be moulded into any shape by the pattern. Experience is tenacious; it is never quite rationalized; whatever the operation of mind upon it, experience preserves a brute and arbitrary element. The pattern is no more rigid, no more something definite in itself, than are the data; the pattern is modified by experience, as experience is modified by the pattern. As I will indicate later, the original sense of an element of experience is a determining factor in the fate of a theory. Given two or three theories about the same facts, what is it that determines one as valid and excludes the others? We will assume that all three are coherent and simple; and all three "explain" the facts equally well. But to explain the facts is not enough; a theory must be true. Many worlds are possible, but only one is chosen; this is not a rational fact, and the question which of the many worlds is actual can be settled only by inspection. Experience contributes to knowledge the factor of brute fact. Thus a theory must not only explain the facts, it must express them, that is to say, preserve the doxic element of experience, as much as possible.

Strict reasoning applies only to that stage of thought in which elements have been already tested and made into data; what we may well call organic thinking applies to the stage of thought in which data are in the making. Thought takes place in a solid medium, so to speak; behind the plane of strict reasoning, there is the third di-

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mension of organic reasoning. Thinking is a process in which the mind moves with all its past history into a cognitive future; but the process is creative; the past does not control the new beyond a certain point, and causality is retrospective. Descartes believed that by emptying mind of all content, he could purify it of all bias, and then tackle the problem of knowledge with greater hope of attaining the truth. But there is no mind apart from content; similarly, apart from mind, data are indeterminate elements. This is made obvious in the education of the child; the mind of the child can not grow unless society furnishes it with some solid matter in the shape of belief to bite upon and assimilate.

"What has all this to do with theory of knowledge?" an impatient opponent might object. "You are discussing how in fact we form our beliefs, and from this you attempt to draw conclusions concerning the validity of strict reasoning. But this is to confuse existence with validity, and psychology with epistemology." I must state most emphatically that in this essay I am concerned with valid thought and valid persuasion, with how an individual ought to arrive at his beliefs and not with how he happens to arrive at them. The actual procedure of thought has been nevertheless a consideration in my argument, and for the following reason: I have tried to show that the validating form "*p* is true, *p* implies *q*, therefore *q* is true" is simply irrelevant (at least for a large portion of thought) because the conditions which it prescribes do not obtain, because definite atomic truths and rigidly necessary implications are not to be had in the universe of concrete discourse. Thus, the issue is not between psychological process on the one hand, and logical norms on the other, but between norms of inference which are fantastic and those which have an application. The logic of strict reasoning is, one might say, non-Euclidean.

An analogous issue is one between norms believed in academically and norms taken seriously and appealed to in practice. The question is, which norms do we acknowledge as valid while actually engaged in solving problems and searching for the truth. Consider David Hume working on his Treatise; he reaches the conclusion that belief in causality is not valid and that we have no right to think that if we hit one billiard ball with another, the first one will move. Thereupon, in order to escape the depression induced by his sceptical philosophy, he goes off to play a game of billiards. Can he then be said to have really believed his sceptical doctrine? What I have in mind is something very similar; in our logic-books we speak of strict implication and its appropriate law of inference, but in the actual work of reasoning we make appeal to entirely different norms.

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Generally speaking, the relevant context is an unconscious philosophical theory. In the Middle Ages, elements had to fit into a theological framework; nowadays they must adapt themselves to the scientific climate; and the modern age is as dogmatic about the scientific outlook as the medieval thinkers were about their theological presuppositions. Not elements only, but patterns also, may be modified or discarded, and for various reasons. In the first place, because of their inability to adapt themselves to the growth of experience. Unless a theory remains fresh and flexible, it succumbs; probably no theory can remain fresh forever. Elements develop a resistance of their own, often in proportion to their number; there are so many of them and as soon as the old ones are explained away, new ones appear. In the end, tenacity tells; and the theory is imperceptibly worn away by the cumulative force of minute considerations, so much so that it is impossible to put one's finger on the exact factor which led to the abandonment of the theory. There is no distinguishable straw which is the last straw. For the most part, a general pattern resists death by allowing itself to be modified; patterns grow, and even when they are seemingly discarded, they are taken up into another and wider pattern. Numbers alone do not determine the issue of the battle; strategy is important; and the framework is assaulted at widely separated points, with the result that its cohesive force is weakened. This should be noted: the victorious strength of the new elements proceeds from the fact that they adumbrate a new and alternative pattern more satisfactory than the one in use. Thus, ultimately, it is a conflict between patterns. Persuasion is not a mechanical process, but a living growth in which elements are gradually assimilated, and ultimately modify those very tissues which assimilate them; and like all growth, persuasion is unconscious in its greater part.

Secondly, a general pattern may crumble through an internal collapse; this is the test of time. Merely to understand the theory as stated is not to know that theory. An idea must not only be thought but experienced as well and lived with; one must become intimate with it as with a friend, or absorb it, as one absorbs the language and customs of a people by living among them. A theory which dazzles at first may not survive the test of routine everyday companionship; with the passage of time the historical, accidental factors are eliminated, and the theory stands naked before the mind. A theory has an exterior and also an interior; and this interior is constituted by its many-sided implications and its interlockings with other theories. Now, these can not be appreciated at a first glance. An ordinary mind may invent a new idea, but it takes an extraordinary mind to apprehend its implications in a thorough-

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ing manner; thus, the test of time may mean that a theory, which when first launched remained unnoticed, later became a dominating conception when its significance was understood.

So far we have emphasized the importance of the total pattern in the rational formation of belief; equally notable is the factor of vividness in apprehension and in evocation. Has the reader had the experience of what I might call the *realization* of an idea? This man read his Kant years ago, as a student; he was a diligent student and learned his material well. In fact, he believed he had mastered it. Later he entered on an inquiry into certain problems of knowledge which arose from his own life or thought; they tormented him and he was obliged to cope with them. He thought backwards until the problems dovetailed with the discussions by Kant; then, he had a vivid sense of realization, and the feeling that now only had he begun to understand him. "This is what Kant meant and I did not know it; rather, I knew it but I had not realized it." Realization is congruent with genuine experience, in the sense of apprehension of a datum, or an idea, or a problem *as real.* Normally, we limit experience to sense-perception; yet such experience is often inert and therefore rationally irrelevant. Genuine thought is a process, a movement of the mind initiated by freshness of apprehension; an experience which has no momentum, which is a possession but not an activity, plays no rôle in the life of reason. Often the reason why so much discussion among individuals is futile is because what one person realizes vividly, the other does not. Evocation is the process by which vividness is conveyed; it is the presentation of a viewpoint in such a manner that it becomes real for the public. It is said that argument is a way by which an individual experience is made common property; in fact, an argument has much less persuasive force than the vivid evocation of an experience. The enumeration of all the relevant points in favor of a theory and against its opposite can never be completed; far more effective is it to state a viewpoint in all its concreteness and in all its significant implications, and then stop; the arguments become relevant only after this stage has been concluded.

Consider a situation in which the issue is not one as to evidence, but as to what constitutes evidence, an issue as to ultimate criteria, ultimate values, ultimate premises. How can argument help in such a situation? Of what avail is scientific evidence to the mystic, believing as he does that sensation is the gateway to illusion? Or, how can rationalistic considerations have any influence on the fundamentalist for whom authority—and not reason—is the basis of belief? Surely, argument is beside the point, because there is no common ground. Evocation is the only way, but conceived in a

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wider sense than that of vivid presentation. The mystic or the fundamentalist can be impressed, if at all, by the contemplation of an alternative standpoint in its character as informing a way of life, as a focus of civilization, a motive power of a world. It is a comparison between two worlds. The opponent is led into the milieu in which the idea in question is lived and practiced; he is required to pass judgment upon the whole civilization permeated by the viewpoint in dispute, after he has actively participated in its movement. *It is a judgment, through life, of a way of life.* This is the appeal to an ultimate intuition of worth, based on a thoroughgoing embodiment of an idea. After all, vividness proceeds from apprehension of value, of significance, of importance.

So far, we have singled out three different rational grounds of belief: the criterion or method of judgment, the general pattern in its relevance to the datum, and vividness of apprehension.

Without a doubt, in reasoning so conceived, subjectivity has a place. Vividness is a personal experience; something to be appreciated and not to be indicated as a definite "this," or to be set down in a concept. But subjectivity need not be the scarecrow it has been in epistemology; knowledge is a valid human activity and as such can not fail to involve both phases, the objective and the subjective, and any dissociation of the two would be an arbitrary, though in certain cases useful, proceeding. Having first set for reason the ideal of clear and distinct thinking which reaches certainty through orderly inference from self-evident premises, when then we realize that belief is not exempt from the hazards of temporal existence, that it is relative and changing, we are apt to rush to the conclusion that thought is irrational. But to give up the Cartesian ideal is not to fall into scepticism; there are other types of rationality than the mathematical model. The Cartesian ideal was modelled on mathematics, which has now given up the conception of self-evident premises; in fact, in modern mathematics there is hardly that which may be called belief. But though the mathematical master has changed his ways, the philosophical disciple still lingers in the old paths.

There is one realm of thought in which strictness of inference seems to hold the field, and that is science, especially physical science. There, we seem to achieve an emancipation from subjectivity, and the greatest possible approximation to clear and distinct thinking. Yet, it would be a mistake to suppose that in science, inference is a self-dependent process, in which a general background is irrelevant; scientific inference is valid only within the framework of certain general ideas, like that of the objective reality of matter, of the existence of some measure of order in nature, and of the

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validity of quantitative methods. Thus, as we pointed above, scientific evidence is without force to the mystic, who rejects sense-perception. Science seems to be certain in its results, because it accepts without question the general presuppositions upon which these results are based. Like all special disciplines, science has a way of disposing of whatever is essentially doubtful in its realm, by simply refusing to envisage it as a problem at all, and accepting it as certain from the very start.

Still, the fact remains that given the general presuppositions and the particulars of observation, inference in science is fairly strict and of universal validity. Is, then, our previous account of reasoning wrong—have we been depicting inference as it is transacted merely in realms of knowledge which have not yet attained maturity? The reply is that science obtains its results at a price. In organic reasoning, the general pattern to which the data are relevant is thoroughly permeated with content; in science, it is the bare abstraction of general order. Of experience, only that aspect is noted by science which is common to all observers under defined conditions. The quality of vividness is transformed into a quantitative element; one datum is preferred to another if it fits with a greater number of data. Strictness of thought is achieved in science by means of a diminution of material truth. The mathematical method yields a complete knowledge of the partial; organic reasoning leads to an incomplete knowledge of the whole. In truth, it is not a question of choosing between the two methods; both are necessary moments in the rhythmical advance of knowledge; and the account of thinking given in these pages is concerned with only one of these phases.

Not only science, but all special disciplines, including conduct and religion, achieve certainty through limitation. Each of these disciplines is a vision of reality from a special standpoint, and an exclusion of whatever does not come under that standpoint. Such concentration is indispensable for progress, but, if not corrected somehow, makes for blindness. So long as alternative standpoints are not considered, the results of one's own method stand alone, possess the mind, appear as absolute. Philosophy is the escape from such intellectual provincialism; it means fresh air and spaciousness; it is the vision of the endless variety of standpoints (Spinoza's infinity of attributes of God) and the liberation from the dominion of any one of them. For this reason, the recent attempt to introduce the scientific method into philosophy does violence to the very nature of philosophic reflection, which is criticism of any method, scientific or other. Nor would it be right for philosophy to erect a new method of its own; this would only result in creating a fresh

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problem, instead of solving the old ones. Philosophy is not a new special discipline; it is the interplay and the inter-criticism of all the methods and the special standpoints.

In philosophic thought, precision is ruled out from the start. Scientific precision is a derivative of scientific methodology; philosophy is the objective discussion of methods and criteria. Perhaps it is impossible for the mind to function without some method or rule of operation; but at least philosophy is not naïve in what it does; the transition from the special disciplines to philosophy is a change from unconscious to self-conscious reflection. Philosophy is the criticism of criteria, through a mutual comparison of criteria and through a relating of them to the fullness of experience. In this respect, philosophy is not unlike ordinary reflection. All ordinary reflection is metaphysical, though unconsciously so; not only does it judge data, but also the methods by which data are secured. That is why the appeal to common sense is valuable; common sense, when it is not only common but sensible as well, rejects the narrowness of methodology, and criticizes the results of a special standpoint in the light of experience as a whole. Philosophy is natural thinking, a return to ordinary reflection, but on a higher level; the metaphysical attitude consists, not in the rejection of methodological results, but in the relating of them to one another, and to experience.

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## LOGIC AND SUPERSTITION

LOGICIANS traditionally neglect the consideration of human circumstances in their reflections and writings. This is no doubt the cause of so many errors in their thinking. It seems that the work of making abstractions engenders the habit of thinking that the abstractions one has made have an independent existence of their own. The penalty of ignoring the concrete human background of our thinking is that our house of reason frequently topples over.

Nowhere more than in the field of mathematics has it become demonstrated that indiscriminate abstraction leads to utter chaos. Logical abstraction has made mathematics the most exact of sciences. But because mathematical abstractions have been created without due regard to their cultural background, the science of mathematics has recently been shaken to its foundations.

Why were mathematicians so much upset by non-euclidean geometry? Was it not merely because the simplified abstractions were so widely removed from the cultural setting in which euclidean geome-

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try had had its origin and of which it was a part? The euclidean geometers had erroneously assumed that the laws of geometry could be discovered by an abstract thinking mind as existing in an equally abstract domain of space. What they have neglected to consider was that euclidean geometry was a product of a very definite social or civilizational system. Had they taken this fact into account there would always have been a place for non-euclidean geometries.

The recent development of postulation conceptions in mathematics as well as in other sciences represents just such a recognition of the concrete circumstances of one's thinking as we are suggesting. To say that axioms are postulates is to take account of the cultural traditions and general human background of a science as well as of the particular circumstances of an individual thinker.

The reconstruction of physics, which is sometimes said to have been necessary because of its faulty erection upon a euclidean foundation, arose out of the more fundamental need to take into account its cultural implications. Newtonian mechanics like euclidean geometry was accepted as the final product of necessary laws of thought and a necessary kind of nature. What one misses in the Newtonian mechanics is an appreciation that it was built up upon a single type of factors of which there were many other kinds. Thus the upsetting influence of relativity theory.[1]

If the consideration of cultural background is so important in the mathematical sciences how much more necessary is it in the humanistic disciplines. In a rceent enlightening article in this JOURNAL[2] Mr. Lesser stimulates this type of reflection in connection with the problem of primitive superstition. This writer points out in effect that when we differentiate between the superstition of so-called primitive people and our own rationality we merely overlook the fundamental cultural conditions at the basis of both of these types of attitudes.

And yet it is questionable whether the problem of superstition can be so easily disposed of. It seems to the present writer that Mr. Lesser stops short in his emphasis upon cultural background, for he goes on to assert that superstition has no other criterion but that of nonconformity with a system. For example, he denies that it is superstitious for a Pawnee to refuse to tell a coyote story in the summer in order to avoid being bitten by a serpent. This is not a superstition, he says, because it is tied up with a whole system of beliefs and is congruent with that system.

[1] It is certainly ridiculous even to suggest that the history of our sciences should have been different than it really has been, but this does not invalidate our judgment as to what have been the factors that have been required for its improvement.

[2] Volume XXVIII, pp. 617–628.

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How shall we define superstition? Mr. Lesser declines to define it as ways of believing or thinking which are not in accord with natural phenomena, although most scholars would do so. Rather, he believes that superstition is merely the opposite of rationality, and therefore because among the primitives the *soi disant* superstitions fit into a system of similar beliefs, they are not really superstitions because they are not illogical or irrational.

By objecting to an established definition of superstition Mr. Lesser clearly indicates that our manner of defining superstition is probably not an arbitrary matter. Personally we should not be inclined to disagree with Mr. Lesser's definition were it not that it is based upon a violation of the principle to examine the cultural background of important human phenomena.

To be precise, Mr. Lesser as an ethnologist erroneously accepts the principle that among primitive people there is no rationality, namely, the accordance of belief or practice with fact. This would seem to imply that there is a difference in kind between the actual cultural conditions in so-called primitive and highly evolved civilizations.

Is it not a misstatement of the cultural circumstances of the Pawnee Indians to say that they have no rationality in our sense? Where is the evidence for an absolute difference between the Pawnee culture and the European? What difference there is amounts merely to the fact that the men of European culture (some of them) have developed an elaborate system of facts, whereas the Pawnees have a smaller system. Conversely it is hardly fair to say that the Pawnees have perhaps a larger system of mythical beliefs, whereas the European peoples as a group have a smaller system. Does there not exist among the Pawnees any type of logic according to which beliefs are equated with facts? It is really difficult to believe that they can carry on their various practical activities without such ways of thinking. This fact is indeed sufficiently realized by Mr. Lesser in one place (for he speaks of uncodified primitive reasoning) though overlooked in another.

We may well agree that rationality or logicality means that elements in a system fit together. But there are two questions here. First, what is the system to which we must refer some particular way of thinking, and secondly, why can not superstitious elements fit into a superstitious system?

As to the first question, every group of human individuals have built up a system of thinking, believing, and practising, performed as adjustments to existential things. When the Pawnees required game they used weapons and knew they could not get it exclusively by incantations. Whatever ceremonies they indulged in before the

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hunt were socially developed accretions precisely as is our prayer ceremony at the opening of Congress. Is there any reason why we should not expect any particular belief or practice to conform to this system of uncodified rules of reason or action?

Because all human groups possess such general rational systems as parts of their civilization we are obliged to judge the merits of particular beliefs and practices. Accordingly, when one healer rubs a concoction on the wounding knife in order to cure the wound, we call this a superstitious practice, whereas treatments applying principles derived from observation of the nature of cells and the effect upon them of drugs and maggots are not considered superstitions.[3]

Does not the problem of superstition cut across the boundaries of particular cultural groups? Superstitions imply the question whether individuals or groups of individuals are responding effectively to objective conditions no matter what else they may do as participants in a certain cultural organization. There seems to be therefore no good reason to object that superstition is a matter of conformity to nature, if not to reason.

As to the second question. Ethnographic study indicates conclusively that every cultural unit harbors in its civilizational equipment superstitious and non-superstitious systems. It follows then that there are logical organizations of both superstitious and non-superstitious elements.

To keep close to the concrete conditions of a civilization means inevitably to set aside the condemnation of one kind of civilization and the unqualified approval of another. In view, however, of the tremendous number of superstitions in every civilization it is not an especially desirable form of anti-dogmatism to minimize the superstition of any particular group. Rather than attempt to show that the so-called primitives are not superstitious it may be expedient to point out that the personnel of complicated civilizations are more superstitious than they themselves like to believe. As it happens, probably the best method of equating civilizations is to refer to general philosophies and cosmologies which are mostly superstitious no matter where found. In this connection it is not unfair to mention the suggestion now frequently made that such cosmologies as Eddington builds up are rather heavily charged with superstition, although Eddington may otherwise be a great scientist.

In conclusion, then, the writer wishes to point out again that logic demands a very circumspect consideration of the cultural details of whatever type of system one builds up. Ethnologists and social psychologists especially find themselves hampered when they

[3] We must, of course, allow for the fact that the details of our science may turn out to be superstitions.

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neglect the intimate details of the facts they propose to generalize and abstract.

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## SUPERSTITION AND LOGIC

I FEEL much indebted to Mr. Lesser for the pages[1] devoted to what I venture to call in shop jargon the concept of superstition. I am indebted because he calls attention to a very interesting point, whether discussed in one phraseology or another. Nevertheless, since language is our tool (perhaps not the only one) of communication, criticism, imagination, and intellectual nonsense, phraseology is important, and what I have to say is for the most part only a comment on some of the terms used by Mr. Lesser. It does not, I think, mean any objection to his point of view, though it may to his way of phrasing it.

After all, a point of view is a point of view; it is not the things or facts to which the point of view refers. In the same way a concept is not an existing thing or the non-existence of anything. Thirty or thirty-five years ago the concept of consciousness was generally understood and used by most psychologists. Later it came to be regarded as an academic joke, as the rock of ages of the type of metaphysics which aimed at reinstating supernaturalism (usually called the Absolute) by logic, by pure rationalism, but not by observation and evidence. Was there or was there not anything that it might be useful to call consciousness? It was not for rationalism or logic to decide. That must depend upon observation and a convenient unambiguous usage of words to be agreed upon.

And this reminds me of how, perhaps fifteen years ago, the word "rationalist" was a term of serious disparagement. We had been escaping for some time from the fallacy of confusing dialectical or logical "rational" consistence with "existential" accuracy, from the faith that the equation $1 + 1 = 2$ is proof that there are two existing things. This is why it sounds, to me at least, so amusing to praise the accurate observations and descriptions of a field-working ethnologist by calling them rationalism. Nothing is more rational and reasonable (if that means a system of reasoning) than an established system of theology. Calvin's proof that the unbaptised infant must inevitably survive in Hell was a logical proof. But because it was logical and nothing but logical, though it was a most interesting illustration of the culture of its day and place, it has been put away in the limbo or museum of intellectual antiquities. And I prefer to

[1] This JOURNAL, Volume XXVIII, pp. 617–628.

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say museum rather than limbo because of the cultural significance of the premises and the syllogism.

What I may call the ontological argument, the dialectical extraction of the *on* from the *logos*, found the peace of death in what seemed to many of us some twenty years ago the discovery, or the broadcasting of it, that logic, to use a now shopworn phrase, "is a non-existential science." It was also called the analysis of the if-then relation. Assemble whatever Ifs you want to, and then see what they add up to, or whether they add up at all.

One word that I should like to see discussed is the word "religion," but the discussion is not called for here, because we know well enough what kind of imagined and used complex Mr. Lesser has in mind.

I quote from the article to which I am really indebted (the first page of it): "What is religion to you is superstition to me represents the undiscriminating attitude toward superstition in its extreme form." To me this seems to represent the undiscriminating attitude toward religion also. The word "religion" is understood in the usual sense, or I suppose it is, of faith (probably cultural faith) in supernational powers. Can religion be atheistic, naturalistic, the reverse of supernaturalism? I am in the habit of saying it can be. The protestant imagination has learned to regard every one's religion as his or her own affair, and it is well not to forget this aspect of the subject. Many of us may know someone who by virtue of genuine education, experience, and culture as measured to-day, has outgrown both the inherited faith in a supernatural power and the metaphysics called allgodism, if we translate the classical label into English. But in the case we may happen to know of, the transition from theism to naturalism seems to be all to his advantage. He has, let us say, translated theism into naturalism as Spinoza did and he has found that a philosophy of empirical naturalism guides and functions better as human wisdom than its more naïve antecedent. But in the experience and toil of living the mood is the same, the behavior is the same, the living is the same, the world of values is the same under different labels. Human ends are the same; but knowledge is somehow more efficient in the cultivation of them. Such a one, remaining the same personality, both before and after his conversion to atheism, is, I hold, no less religious than before he outgrew what most of us call religion. On the other hand, someone else, no less a master of education, experience, and culture, and who has outgrown the "religion" of his ancestors, is not "religious" at all, though he is even more socially coöperative than his atheistic brother, and though his friends regard him as a saint. What is it that makes one of these wise, experienced, and cultivated gentlemen

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a religious atheist, and what does the other one lack, possibly to his advantage, so that he is an irreligious atheist and a "saint"? Whatever the difference is, it is of intimate psychological character, something that the "spiritual" Christian much insists upon. To enlarge upon this point would however be to forget that what we are concerned with is the concept of superstition.

Atheism can be collective or individualistic; social-coöperation can be promoted by theistic institutions, and by ardent faith in an atheistic social philosophy. Perhaps the Soviet government would like to build up such a socialized conviction with its dogmas, its legal orthodoxy, its holy writ, its group instrumentality functioning by virtue of its influence on the collective imagination, its cultural efficacy.[2]

The sort of definition or concept or point of view that I suggest is the functional one. What religion is depends upon what it does. It is like a medicine for the group, or for the individual, and we do not say that a medicine is true, we ask how it works. It is a bit of sociology. The dogma or faith complex can be as far from the "facts" as any one wishes to say it is, but for the group it is a cultural institution, based on social psychology and of the greatest social value at certain epochs of group life, because, I venture to believe, of its efficacy as one factor in social integration.

This may seem like a resort to a concept instead of to empirical description. And I do, I admit, assume that religion, whenever it is culturally or socially important, is a functioning institution, and

[2] Definition, so far as I can see just now, is telling what we or some one else mean or ought to mean by a word used as the name of a class. I doubt if telling who Mr. Coolidge or Mr. Mussolini is or what the Albert Memorial is or who Christ was or what the Battle of Hastings was would be called formulating a definition. Yet functionally it might be very similar. We can define a circle, infinity, immortality, a centaur, art, history, and the less we are interested in dissecting things that exist and act, the easier it is to define. One can describe as accurately as one can, and try to find out whether there is any characteristic influence or behavior, any typical value that has been overlooked because it is less strikingly conspicuous than some other traits. And description is often by intention partial and piecemeal. One often wishes to find out whether all specimens of a type, specimens that can be observed, studied, and described, show some one mark along with many others. A complete description would be beside the point for the purpose in view. Is there or is there not some one feature in common between genuine Christian Scientists, John Knox, Savonarola, Spinoza, the Mohammedans who make pilgrimage to Mecca, and the cultivated Buddhists who substitute their own type of wisdom for belief in the supernatural, "sages" of medieval China and of modern India, the Pueblo Indians, the still primitive natives of Australia, of South America, still uncontaminated Esquimaux, natives of the Congo and of New Guinea, and elderly religious conservatives of Russia, intensely protestant Sweden, and the atheistic bolsheviks inspired by his social vision?

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that this is the important thing about it, and helps to explain why it plays the rôle it does in the cultural and the historical scene.

But to return to labels: rationalism, as I and many others use the word, means logical consistency. Look now at page 619 (this JOURNAL, Vol. XXVIII): "The truth is that in our culture, rationalism is the dominant mode of thinking. It is a cultural pattern among ourselves to ask for reasons and explanations." "Rationalism" is, however, in the strict sense, not the habit of accurate observation, it is thoroughness in the summation of postulates, and while one culture may be more "rational" or "rationalistic" than another, perhaps a more striking difference is the difference in premises, postulates, or collective "faith." Because the premises are cultural, inherited, and perhaps "absurd," the folk that possesses them as a dialectically consistent complex is not less rational on that account.

Now I come at last to Mr. Lesser's concept of superstition, which, like all concepts in science of research, has to be tested by its usefulness. A superstitition is, according to this definition or use of a word, the holding of a belief without any knowledge of its place in the setting of interrelated ideas to which it belongs and apart from which it can not be understood. Whether the isolated idea is "true" or has any empirical justification is irrelevant. This way of putting it is a very interesting experiment; perhaps the following will do for an illustration. Many of us know that given a right-angled triangle, with the sides $a$, $b$, and $c$ ($a$ being the hypothenuse), $a^2 = b^2 + c^2$. But we have forgotten or never have known the geometrical demonstration or any other demonstration. The proposition in question is thus a superstition. Given the definition and its dialectic, I agree that it is. The definition is, even more than mine of religion, a logical definition. As an experiment, that is nothing against it. A knowledge, however, of the proposition's locus in plane geometry would transform it from the class "superstition" to some other class.

This meaning of the word "superstition" is, as Mr. Lesser has pointed out, not the usual meaning. The usual meaning is not a "logical" one since it is tied to the facts of existence. Mr. Lesser might say that the faith of the usual Catholic communicant in the mass is superstition, but this faith, in its theological setting, in the mind of one who knows this setting is not superstition.

Is, however, and here I get to the point discussed by Professor Kantor, the total dogma-complex which includes the miracle of the mass, itself a superstition? I am certainly in the habit of saying so, and that, because I regard any supernaturalism whatever, whether physical supernaturalism of the physicist or spiritual supernaturalism of the believer in God, gods, goddesses or immortal souls as

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superstition inherited from a very remote and primitive past. This is not a "logical" concept, but it is an existential one, or it aims to be. At the same time, I am very glad to be acquainted with Mr. Lesser's logical concept, the more so as he is at home in field work.

Now let me say a few words to express my agreement with the spirit of Professor Kantor's too emphatic disagreement with Mr. Lesser. To begin with I can not believe that Mr. Lesser "accepts the principle that among primitive people there is not rationality, namely, the accordance of belief or practice with fact." Because there is much irrationality in the usual sense of the word, I am sure Mr. Lesser does not mean there is no "rationality" at all.

I have said, or tried to, why a logical concept is a dialectical tool and perhaps a very useful one. If that is clear, I have shown why I shy away from giving logical emphasis to a word meant to be descriptive of empirical data. The word "superstition" is so useful in its old meaning, however vague that may be; I rejoice so much in denouncing current faiths as superstition, that I find myself in general agreement with Professor Kantor in spite of Mr. Lesser's admirable clarity and precision. At the same time, I think the difference he has in mind between the isolated and the interrelated should be kept in view by using some word chosen or invented to mean just that. Mr. Lesser is far better qualified than I am to select that word.

And now, to my surprise, I find myself more in agreement with Mr. Lesser than I thought I was.

Putting myself in his place, I might remark to the writer of the earlier part of this paper: "You say that the total complex of faith-postulates which provides the cultural universe of discourse that the doctrine of the mass depends upon is itself superstition?" Yes, using the word "superstition" in its usual sense, I do. But what is it that seems to you to justify the usual sense of the word in this instance? Is it not that, in your opinion, we have acquired in the course of the last one hundred years—since Darwin, Tylor, Rhode, and many others—a far more comprehensive field of reference and control than our grandparents were acquainted with? Does not this larger field of reference, because of the new data it contains, have, as a dominant characteristic, new standards, a new type of control, which gives it what we call its scientific emphasis, its scientific conscience, its type of postulate which, in any honest discussion that deserves respect by one burdened with the scientific conscience is the final court of appeal? And is not superstition from your own point of view, whether a voluntary superstition or not, precisely that belief that contradicts the larger and steadily increasing field of reference that is our human possession to-day?

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And does not this amount to a logical dislocation of what you call superstition? And do you not call it superstition because of that logical dislocation. If so, it seems to me that your own use of the word "superstition" implies a concept of just that logical type that Mr. Lesser calls our attention to. And I trust that you will feel that your debt to him is larger than it seemed to be when you began this string of paragraphs." And I should have to say "yes" to all these questions about whether the concept of superstition as advocated above by me in agreement with Professor Kantor, was not, after all, a concept of the logical type. And Professor Kantor might add: "that is interesting, but like so much that is called philosophy, it is without importance."

There are many more of these lines that I intended to write, and I have written them hastily and without much care. I will close with a quotation from a distinguished scholar, a humanist of rare and sensitive comprehension, to whom my debt is very great, Gilbert Murray (in *Five Stages of Greek Religion,* p. 19): "I shall not start with any definition of religion. Religion, like poetry and most other living things, can not be defined. But one may perhaps give some description of it or at least some characteristic marks."

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## THE FINAL SOLUTION OF ZENO'S PARADOX OF THE RACE

THE most widely accepted solutions of Zeno's Paradox in contemporary philosophy are those of Russell and Bergson. Russell points out that Zeno's premises contain the common-sense conception of motion as being from one point to the next and so on. But space is a mathematical continuum so it has no point next to any given one. Therefore motion from one point to another is fiction; in reality the motion of a body is simply the fact that at different moments it happens to be at different places. According to this analysis there would be no difficulty in Achilles' catching up with the tortoise; they meet when they both happen to be at the same place at the same time.[1]

This solution does not satisfy those philosophers who do not believe that a mere plurality of points correlated with moments can account for the unity of motion. Their view of the matter is expressed by Bergson and, with some additional refinements, by Whitehead. Motion has an organic unity which does not allow for indefinite divisibility. Zeno divided the path of motion which al-

[1] I owe this interpretation of Russell's analysis to Professor W. P. Montague.

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ready took place, but he was mistaken in his belief that he divided motion in the making. From this point of view Achilles' motion is of a different kind, as it were of a different rhythm, than the motion of the tortoise, where the rhythms depend on the difference between the steps of the racers. It is Zeno's error that he tries to force the step of Achilles into that of the tortoise and both into indefinitely small portions of the track. Because of the qualitatively different motions a time comes when Achilles simply steps over the tortoise. The weakness of this argument is that in asserting the incommensurability of two kinds of motion it fails to explain the fact that they can be compared.

There is no doubt that both arguments are convincing in their refutations of Zeno and in showing important features of motion, but they are inadequate. In order to give a complete scientific account of the problem let us apply to it the Theory of Relativity which is the science of motion. One must first draw a space-time map of the race. Let him symbolize space by a straight line (the spatial path of the racers) and time by another straight line normal to the first. The curves drawn between these coördinates are called world-lines. Since the world-line of a body at rest is parallel to the time-line, the faster a body would move along the track of space the greater would be the angle made by its world-line with the time-line. It follows that when the world-lines of Achilles and of the tortoise representing their respective motions are drawn they are bound to intersect, and the "locus" of intersection is where Achilles would catch up with the tortoise. By reading off the numbers of the corresponding space and time coördinates, the place and moment of the event would be established. In general, the description of world-lines in terms of correlated pairs of numbers (one giving the measure of space, the other of time) agrees entirely with Russell's analysis of motion. At the same time the fact that the world-lines of Achilles and of the tortoise are distinct and timeless gives justice to Bergson's conception of the qualitative difference and indivisibility of their motions.

This solution is conclusive unless the Theory of Relativity is wrong. But it should be noticed that in a sense it supports Zeno's contention. For the tortoise would be overtaken in a timeless "locus" which when expressed in terms of separate space and time would give a private perspective; according to Zeno an illusion.

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# BOOK REVIEWS

*La Critique et la Religion chez David Hume.* ANDRÉ LEROY. Paris: Félix Alcan. 1931. Pp. xvi + 376.

David Hume did not make it easy for any one to accomplish the purpose which M. Leroy has in view in this book, that is, to understand his attitude toward religion. Indeed, it has seemed to many who would like to know what that attitude was that Hume deliberately raised a dust so that no one should see too well. For his most extended discussion of the arguments concerning the existence and nature of God he chose the dialogue form, and on the surface, at least, it is as inconclusive as dialogue is likely to be. The skeptical Philo has the better of the argument so far as logic goes, finding damaging objections to every proposition brought forward by the rationalistic Cleanthes or by Demea, the churchman, who finds faith the only escape from the unsatisfactory ways of reason. Yet in the last dialogue, Philo confesses that he can not doubt the existence of God—for "to be a philosophical sceptic is, in a man of letters, the first and most essential step towards being a sound, believing Christian." The conclusion of the dialogue only adds to the uncertainty, for the narrator comments: "I cannot but think that Philo's principles are more probable than Demea's; but that those of Cleanthes approach still nearer to the truth."

Hume meant, as he said in a letter to a friend, to make Cleanthes the hero of the dialogue, but he has done so only by allowing Philo to give up his dialectical victory. Was this a mere concession to the prevailing religious conventions, or does it have significance as a revelation of Hume's own position?

M. Leroy discusses the question and presents his solution with a subtlety and a modesty suited to the character of the problem. His conclusions come as his own impressions following a most careful study of all of Hume's work in its historical setting. He presents a detailed exposition of all of Hume's writings which bear on religion with their difficulties clearly faced. As a consequence, his work is of the greatest value to those who are interested in the question he discusses, even if his conclusion is not accepted in its entirety. In this field a demonstrative exposition is not possible, yet the impression which Hume's work makes on a scholar who has given it much careful study is in itself of value.

The analysis of Hume's work is preceded by a detailed account of the influences under which Hume formulated his philosophical views. There is a valuable section on the influence of the classical and the French writers, an aspect of Hume's intellectual biography which has been too much neglected. The author points out inter-

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esting parallels between Hume and Cicero and Hume and Bayle.

Rather surprisingly little mention is made of Malebranche, although there are most obvious similarities between his treatment of causation and that given by Hume. M. Leroy cites Fénelon and Sherlock as predecessors of Hume in holding that we have no direct experience of necessary connection in the action of the will upon the body. Yet Malebranche is even more explicit upon this point.

A rather long section on the orthodox and the deistic rationalists in England is clear and adequate without presenting anything new. There are interesting comments on Hume's relation to both Butler and Berkeley. "Hume s'oppose en effet à Butler pour toutes les affirmations essentielles, bien qu'il paraisse s'être inspiré de l'Analogie pour poser les problèmes" (p. 184).

M. Leroy gives a careful analysis of Hume's general philosophical position with a desirable emphasis on the functions of the imagination and of habit. He then turns to his basic problem: what was Hume's considered attitude toward religion? He believes that the answer is to be found in Hume's significant and positive contribution to the solution of philosophic problems, his doctrine of conventionalism, which he applied to speculative knowledge, to morals, and to religion.

M. Leroy first states clearly the difficulties of interpretation which Hume's writings on religious subjects present. He points out that in each of them there is an impasse, a contradiction between the course of the argument and the apparent conclusion. In the *Dialogues Concerning Natural Religion,* the argument leads to a positivistic attitude which then seems to be rejected. Philo (whom Leroy identifies with Hume) concludes that skeptical reason, which he so well represents, can not hold its ground against religious belief since the latter not only has some plausible arguments in its favor but rests on natural propensity and education as well. He concludes that it is a natural sentiment to wish that heaven might vouchsafe to dissipate our ignorance by a revelation which would discover God.

M. Leroy thinks that the conclusion of the essay *Of Miracles* is entirely analogous. Hume attacks the validity of the evidence for the miraculous and then seems to abandon the whole point of his argument in an appeal to miracle. Leroy rejects two possible interpretations: that Hume is falling back insincerely on an oratorical device to avoid criticisms; and that the works on religion are merely clever mosaics without a consistent point of view.

He turns to the *Natural History of Religion* and finds there a further dilemma, but also the hint of a solution which he believes is borne out by Hume's writings on morals and on human nature. The conclusion of the history seems to be that the only choice in

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matters of religion lies between scepticism and superstition. Yet Hume has developed in this work, the conception that the development of religion is due to the action of certain fundamental, permanent principles of the imagination, the same principles which are responsible for the formulation of the laws of science.

This attitude M. Leroy calls conventionalism and finds it to be the clue to Hume's attitude toward the entire religious question. When the sceptic approaches religious problems, he finds that experience will support either the mechanistic hypothesis or the religious one. The first is more satisfying as a rational explanation, but the second has the advantage of being more adapted to human needs. A miracle might give a decision between the two, but neither an external marvel nor a mystic experience could establish itself beyond the possibility of doubt. The sceptic is, therefore, incapable of deciding between the rival hypotheses. Yet he is not always the philosopher; he is often the man. Then anthropomorphic theism forces itself upon him because it satisfies both his reason and his feeling. Yet he is still mistrustful and reduces his theism to a bare formula. At the same time he makes a spontaneous appeal to a revelation, an inner experience comparable to the experience which lies at the basis of science. This appeal to miracle is an expression of natural sentiments and perhaps it is the manifestation of a reality inaccessible to intelligence.

Telle est l'attitude de Hume; c'est avant tout un fervent de science expérimentale et il rejette toute explication qui ne se fait pas par les causes et les conditions; mais il connaît la valeur de cette science expérimentale qui, constituée par des hommes, n'est qu'une science humaine et n'exprime vraisemblablement pas la réalité objective telle qu'elle est. Par suite, l'explication religieuse anthropomorphique conserve une valeur, non pas sous sa forme grossière, mais sous une forme épurée; il n'est pas sûr que la foi nous permette d'atteindre par un élan sentimental l'essence même de toute réalité et de communier en Dieu; du moins rien ne lui interdit cette espérance ni les supercheries des fanatiques, ni les illusions des enthousiastes: et nous pouvons rêver d'une expérience mystique qui, en ellemême, n'est pas impossible [p. 369]. . . . Mais qu'on ne s'y trompe pas, le sourire moqueur du sceptique cache une espérance qui n'ose s'avouer; la science ne ruine pas toute croyance. Par cette attitude, Hume est le précurseur d'un état d'âme très fréquent de nos jours; c'est par une anticipation qu'il clôt la querelle déiste et c'est pourquoi son rôle est important dans l'histoire des idées: une nouvelle orientation spirituelle se dessine qui plus tard as précisera [p. 370].

It is clear that M. Leroy's solution depends fundamentally upon his conception that Hume held the laws of science to be conventions, not only in the sense that they are human formulations, but also that they fail in some way to describe accurately the character of reality. If that was Hume's view, he might plausibly hold that revelation had a place beside science as additional experience.

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On this point it does not seem to me that M. Leroy has made out his case. Conventionalism is clearly expressed in Hume's treatment of morals; it is equally evident in the *Natural History of Religion*. Here the evidence is complete. But in what sense can it be said that Hume considered the laws of science to be conventions? He insisted certainly that they were a resultant of the operations of the human imagination and of human experience. In that sense any human formulation must be a human convention, one as truly as another. But if we include the idea of inaccuracy as an essential part of the conventional, Hume, it seems to me, did not hold that the laws of nature were in that class. M. Leroy seems to use first one interpretation and then the other.

For instance, he refers (p. 220) to the passage in the *Enquiry* in which Hume, after discussing the origins of belief, concludes: "Here then, is a kind of pre-established harmony between the course of nature and the succession of our ideas; and though the powers and forces by which the former is governed, be wholly unknown to us; yet our thoughts and conceptions have still, we find, gone on in the same train with the works of nature." Surely there is no question of inaccuracy here.

M. Leroy, furthermore, points out that, according to Hume, all reasoning, good or bad, is due to the imagination acting according to more or less variable principles. He adds "La valeur de la science expérimentale lui vient de sa rigueur et de sa précision, et non de ce qu'elle ferait intervenir des facultés supérieures à l'imagination. Raisonner correctement, c'est donner aux objets les rapports qu'ils ont entre eux dans l'expérience."

This seems again to recognize that Hume considered the laws of nature to be accurate representation of the course of nature as it enters human experience. Any reality more ultimate but not revealed to human experience was, of course, for Hume's positivistic philosophy, beyond knowledge.

Yet, if I have understood him rightly, M. Leroy seems in his conclusion to turn to another interpretation. He states there that, for Hume, science does not express accurately objective reality as it is. Two earlier comments refer to the point in such a way as to suggest that he means by objective reality not an ultimate lack of experience, but the ordinary course of nature.

> Elles [beliefs] ont un fondement objectif; mais sans doute, comme les erreurs et les préjugés résultent du jeu des mêmes facultés que les lois scientifiques, devons nous admettre que les unes et les autres, bien qu'en rapport avec la réalité, ne la traduisent pas de manière complètement désintéressée et que, pour employer un mot que nous retrouverons et qui me parait traduire avec exactitude la pensée de Hume, les unes et les autres sont autant de conventions humaines, mais plus ou moins soigneusement établies [pp. 235–236].

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If Hume hoped for a revelation which would reveal reality, it was not, it seems to me, upon the ground that the laws discovered in science were inaccurate in their own realm but that experience as it stands is incapable of revealing anything beyond itself. The sceptic Hume may have concluded, therefore, with Philo that the evidence for design is sufficient to render plausible a belief "that the cause or causes of order in the universe probably bear some remote analogy to human intelligence" and that there is this much place for faith in addition to science. He may have found this solution satisfying to both his reason and his sentiments. M. Leroy has made a good case for such an interpretation which will stand without the assumption of conventionalism.

I find it difficult to take as seriously as does M. Leroy Hume's expressed desire for a revelation, a mystic experience, particularly in view of the tone of the essay on miracles, in which one such appeal is made. With regard to a difference of impression on so ambiguous a point we may accept Hume's dictum that "reasonable men may be allowed to differ, where no one can be reasonably positive." M. Leroy has given an example of the candid and illuminating way in which an intricate and confusing matter of interpretation may be handled.

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*The Dilemma of Religious Knowledge.* CHARLES A. BENNETT. Edited, with a preface, by William Ernest Hocking. New Haven: Yale University Press. 1931. Pp. xv + 126.

This book affords a welcome opportunity for gaining a fuller understanding of the thought of Professor Bennett, whose death in 1930, at the age of forty-four, brought so great a loss to philosophy and to the interpretation of religion in this country. The preface by Professor Hocking gives a brief account of Professor Bennett's work and pays to him a tribute of personal friendship. The chapters of the book consist of a series of Lowell Lectures given in King's Chapel, Boston, in the spring of 1930.

The thesis of the book is that the supernatural is the central element in religion and "that the claim of religion to convey insight about the real world may not be denied." The dilemma arises from the fact that the supernatural "eludes rational comprehension," while, as the author holds: "The problems of religion are philosophical, and there is no substitute for a philosophy of religion."

The very nature of this dilemma shows that Professor Bennett was not conceiving supernaturalism as it is conceived in the theology of the school now dominant in Germany—"The Dialectical Theology"

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or "Theology of Crisis." By this latter school Christian faith is set in opposition to metaphysics, mysticism, and religion in general. To this theology the claim of reason to be the last court of appeal is sin. Professor Bennett, it is true, in his chapter on "Faith" repudiated the assimilation of the faith of religion to the faith of science. "As a matter of fact the faith of science and the faith of religion have nothing in common." But his supernaturalism is more akin to that of Rudolph Otto, as may be seen from his review of Otto's *Idea of the Holy* (this JOURNAL, Vol. XXIII, p. 460). In the present work he has written: "The supernatural is a veritable factor in experience, and one which the mind can identify and grasp without being able to express." The supernatural is really given in the religious sense of mystery, which "is the sense of the unseen order supervening upon, shining through, and transfiguring the seen. It is this that is here proposed as the central element in religion."

The most important chapter of the book is the first, which develops the author's idea of the supernatural. It is here shown that the Mysterious Power into relation with whom religion enters is not an Unknown or Unknowable. The mystery springs, in part, from "some initial sense of wrongness or alienation from the divine." Further, the Mysterious Power "is a being with whom man can in principle be reconciled." An ultimate harmony is possible. Bennett speaks of "the ambivalence of the religious mystery. As Otto puts it, the numinous is not only daunting but alluring." Again, worship by its very nature undertakes to establish communion with God. "It takes two minds to make communion. The mysterious power, if it be the power that religion is concerned with, must be conceived as personal, at least to this extent, that he can hear his worshipers." Finally, Bennett maintained that it is inherent to religion to generate devotion. Religion never leaves the springs of conduct wholly unaffected. "I do not think," he wrote, "that religion either in its beginnings or in its later stages has been separable from morals."

Professor Bennett has supported his doctrine of supernaturalism by a critique of the naturalistic treatment of religion from Feuerbach to Ames and Durkheim. He finds Feuerbach's religious subjectivism to be a part of a general subjectivism, quoting from the latter the following: "The object of any subject is nothing else than the subject's own nature taken objectively." But if religion must substitute Humanity for God as its object of worship, it will die of disillusionment; for "one does not need to be pessimist or cynic to feel that man is one of the poorest substitutes for God that ingenuity can propose."

In treating the symbolical theories of religious ideas to which naturalism, rejecting the notion that God is the Supreme Existent,

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resorts, Professor Bennett has coupled Sabatier and Santayana. This procedure results from a singular misunderstanding of Sabatier, which is possible only when one isolates one side of his teaching from the rest. The author cites from Sabatier's *Outlines of a Philosophy of Religion:* "God, the Good, the Beautiful—these are not phenomena that may be grasped outside the ego and independently of it. God reveals himself only in and by piety." And his comment is: "That seems to me equivalent to saying that God exists only when and as he is felt." Thus he finds Sabatier to be "another exponent of humanism, another disciple of unqualified immanence." But Sabatier begins his section on "Symbolism" by saying: "The object of religion is transcendent; it is not a phenomenon." If God exists only when and as he is felt, then to Sabatier he would be only a phenomenon. Moreover, the section on "Symbolism" is preceded by a section on "Teleology," in which it is maintained that teleology is required for the explanation of the universe. Such an explanation is, indeed, religious in its character, but it is none the less legitimate and necessary for that. Unquestionably for Sabatier God is the objective cause of the experiences of piety and the ultimate ground for the unity, or the unifying, of the causal order and the moral order.

Santayana's view that "what successful religion should really pass into is contemplation, ideality, poetry," is much too sophisticated, according to Bennett. If religion is naïve in holding that it possesses objective truth concerning unseen reality, then that naïveté belongs to the essence of religion. If you would have religion yield to you the ideal values that Santayana so appreciates, it will not do for you to have read Santayana.

The sociological way of naturalizing the supernatural is examined by the author in the writing of Durkheim. He finds that the "Society" which for Durkheim is the true object of all religious symbols is a mystical rather than a scientific entity. He also finds that prophets are the growing points of religion and morality, and that they are such because they lay hold of a supersocial good. "When we examine those beliefs upon which religion lives, we find that they are not symbolic translations of natural social forces, but rather intimations of forces truly cosmic in sweep." As for the psychological way of naturalizing the supernatural by making the subconscious the source of religious ideas, the author first repudiates the spatial imagery which leads us to think of a mental *region from* which impulses or ideas or desires pass *into* the conscious mind. He then brings forward the principle: "Whenever you get a resolution of some mental conflict through the fusion of the conscious and the subconscious, that resolution is precipitated by the *discovery of an*

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*object* which is common object for conscious and subconscious alike." There is no reason to deny that in religious experience this object may be God.

What are the features of Bennett's philosophy of religion as they were emerging in his latest writing? One of them is his insistence, in the spirit of Schleiermacher and Otto, upon the autonomy of religion. "I reject," he wrote, "all attempts to hand over religion and its problems to anthropology or sociology or psychology, as though these sciences, separately or together, could provide us with a sufficient explanation or interpretation." This autonomy of religion involves "Metaphysical Respiration," as the title of the last chapter of the present work expresses it. "The metaphysical pretensions of religion are the most important thing about it." Hence, although he does not offer a fully formulated theory of religious knowledge in this volume, he really gives, as Hocking points out, a theory of intuition. But in certain respects his thought was more fully expressed in his earlier book, *A Philosophical Study of Mysticism.* "Wisdom lies not in choosing either mysticism or philosophy but in choosing both. Philosophy is the articulation and completion of mysticism, but mysticism, in turn, is needed in order to complete by correction and supplementation the work of philosophy. And this is a perpetual process" (p. 110). In this "metabolism of the mind" one recognizes Hocking's Principle of Alternation.

And finally, when the philosophical justification of the metaphysical respiration of religion is undertaken, at what sort of metaphysics did Bennett believe one would arrive? A hint as to the answer can be found in an article published after his death, entitled "Poetic Imagination and Philosophy" (*Yale Review,* December, 1930). He was there maintaining that art also constitutes a revelation of truth. But while this view implies autonomy for art as well as for religion, it also implies "that we have some way of knowing the real nature of things that is not the way of art, science, or religion." In short, we can not dispense with "the conception of a systematic unity of reality and of one objective version of it." To such a conception we shall be led if we recognize, with respect to art and religion, that "the federal principle must have its hour as well as the principle of sovereignty."

The present volume was to have been supplemented by a second part dealing with "The Metaphysical Problems of Religion," but this part exists only in rough draft. But the inevitable incompleteness of Bennett's philosophy of religion is largely made up for by its rich suggestiveness. He not only upheld by his reasoning, but exemplified by his teaching and writing, the value of making intuition an integral part of philosophy.

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Verhandlung des Zweiten Helgelkongresses vom 18. bis 21. Oktober 1931 in Berlin. Im Auftrag des Internationalen Hegelbundes herausgegeben von B. Wirgersma. (Veroeffentlichungen des Internationalen Hegelbundes) Tübingen: J. C. B. Mohr. Haarlem: Tjeenk Willink & Zn. 1932. 200 s. 10 M.

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## NOTES AND NEWS

To the Editors of the Journal of Philosophy:

Recent action on the part of the Western Division of the American Philosophical Association makes final the decision of the Board of Officers of the Association to hold a general meeting in Chicago during the early days of September, 1933, for the reception of the fourth series of Carus lectures. The History of Science Society has been invited to meet with the Association on that occasion, and it is hoped that certain sessions may be arranged that would be of interest to both societies and that would fit into the larger scientific program of the Century of Progress exposition.

The Carus Lecture Committee is happy to announce that the fourth Carus lecturer will be Professor William Pepperell Montague of Columbia University. The title of his lectures will probably be *The Great Visions of Philosophy.*

Edward L. Schaub,
*Chairman, Carus Lecture Committee*

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Professor Arthur O. Lovejoy, Johns Hopkins University, has been appointed the second incumbent of the William James lectureship at Harvard University for the first half of next year. Professor John Dewey, Columbia University, was the first lecturer appointed under the foundation for psychology provided by the will of Edgar Pierce, formerly instructor in psychology at Harvard.

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WHAT CAN WE KNOW?
WHAT CAN WE BELIEVE?
WHAT CAN WE THINK?

# *Knowledge, Belief and Opinion*

*By*

JOHN LAIRD

*Regius Professor of Moral Philosophy*
*University of Aberdeen*

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THE JOURNAL OF PHILOSOPHY

# THE DISPLACEMENT OF THE SENSE-DATUM[1]

THE purpose of this paper is to examine a certain kind of evidence commonly used in support of epistemological dualism. I shall try to show why, in my opinion, this evidence is not appropriate to the interpretation so placed upon it. With the validity of other kinds of evidence and other arguments I shall not be concerned. The following considerations are by no means intended to be a general disproof or refutation of dualism. For I trust that I have profited by Mr. Lovejoy's counsel to defer debate on fundamental issues until we have reached an understanding of what our different views may severally imply. "A great part of philosophy," as he says, "should consist of attempts to determine what sets of propositions, in certain fields of investigation, properly go together."[2] What I wish to determine is whether the propositions, descriptive of a certain class of perceptual situations, do or do not "properly go together" with the conclusions of epistemological dualism.

The kind of evidence I mean consists of situations in which there occurs what Mr. Strong has somewhere described as a spatial or temporal "displacement of the sense-datum" with reference to the object it is supposed to disclose. Familiar examples are the apparent convergence of parallel tracks in the distance, the mirror-image seeming to be located behind the glass, the elliptical image of a penny seen from a certain angle, the sound of a gun heard at an interval after it has been fired, and (assuming the finite velocity of light) the present appearance of a star in my vision as it existed in a more or less remote period in the past. These examples might be differently worded, but no one will deny, I suppose, that they denote actual states of affairs in perception. We may admit at the outset that there are manifest differences here between what Mr. Lovejoy calls the datum and what he calls the "cognoscendum," or real object. But does the "displacement" of the former support the interpretation for which the dualist contends, namely, as tending to prove the separation of what is intuited-as-given from what is asserted-as-known in our perception?

In order to put the problem in more explicit terms, let us take

[1] Read at a meeting of the American Philosophical Association, Pacific Division, December 28, 1931.

[2] *The Revolt against Dualism*, p. 257.



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one of the examples of which Mr. Lovejoy makes frequent use in his argument and consider what precisely it is intended to prove in support of epistemological dualism. When you look at a star (so he argues), what you directly perceive as the star at that moment can not, on the assumption of the finite velocity of light, be the star as it exists (if it does still exist) at that same moment independent of your perception. For the light-rays, which now give in your vision the appearance of that particular spot of radiance in the heavens, must, according to scientific information, have been emitted from the star itself during some period in the more or less remote past. Hence the content of your immediate awareness, the datum, has a different spatial and temporal reference from that which belongs to the body supposed to exist out in space as the real object of your knowledge. This leads to the conclusion which epistemological dualism seeks to establish: "that the datum whereby you know any (real) object is not identical with the object known."[3]

As Mr. Lovejoy is careful to point out, this argument is not to be confused with psycho-physical dualism or the question whether or not the datum exists as part of the same world as that in which the physical object is supposed to exist. The appearance or (to borrow Mr. Strong's term) the "presentment" of the star in your perception might be regarded as an event occurring under the same general laws of the physical universe which condition the real existence of the star. Or it might be supposed to occur under purely "mental" conditions quite apart from the physical universe. Upon either hypothesis, it would be possible to argue the strictly epistemological question of the relation between the datum and the object. "The historic fusion of the two dualisms," says Mr. Lovejoy, "may turn out to have been justified. . . . But we must not assume this in advance; the case for or against each of the defendants must not, because of that possible outcome, be entangled with the case against or for the other."[4] As I understand the problem, then, we are not entitled to prejudge the question of the identity or non-identity of the datum with the object of knowledge by any considerations drawn from the alleged bifurcation of nature into mental and material existence.

Thus, the essential point in Mr. Lovejoy's case for epistemological dualism is the denial of identity between the datum and the real object or *cognoscendum*. And this denial does not of itself entail the assertion of a psycho-physical dualism. Now, a proposition can be significantly denied in one of three different senses: (1) because it is absurd; (2) because, though intelligible, it may be false; (3) because it is merely irrelevant. If epistemological dualism meant the denial of identity in the first sense, it would require no argument

[3] *Ibid.*, p. 303.
[4] *Ibid.*, p. 27.

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since the denial of an absurdity is a self-evident proposition. As Mr. Lovejoy offers an elaborate disproof of theories which attempt to identify the datum with the real object, we must be supposed to understand his denial either in the second or the third sense. Clearly, it is not in the third sense, as being the denial of an irrelevant proposition, since he claims to be establishing some positive truth about the nature of knowledge. If, however, it is true that the whole question of identity is merely irrelevant to the class of evidence we are considering, then Mr. Lovejoy's arguments here for a dualistic theory of knowledge, based on the denial of identity or the assertion of non-identity, involve an *ignoratio elenchi*. For example, were someone to defend the moral integrity of a person's character by arguing that its interior angles were together equal to two right angles, or its specific gravity was proportionate to its mass, I should be justified in rejecting the argument as irrelevant. In so doing, I should not suppose that the contrary assertions conveyed any positive truth about his character. If I were to deny its moral integrity on the ground that its interior angles were *not* equal to two right angles, or that its specific gravity was disproportionate to its mass, I should be guilty of the same *ignoratio* as my opponent. When Mr. Lovejoy maintains that the datum is not identical with the real object in these cases of perceptual knowledge, he seems to be suggesting that their non-identity is a positive truth about the nature of knowledge in general, namely, that all knowledge is indirect or representative. I shall try to show that he has substituted an argument, depending for its force on *psycho-physical* dualism, for what is ostensibly an *epistemological* account of the relation between the datum and the *cognoscendum*.

What is the conception of identity which, according to Mr. Lovejoy, constitutes the issue between epistemological dualism and its opponents? Although he makes no explicit statement on this point, it is possible to infer the kind of identity in question from his discussion of the several phases of the "revolt against dualism." The identity in question is either that which obtains *between a whole and its parts* or that which obtains *between a substantive and its attributes*. Since the whole is equal to the sum of its parts, we say that there is a relation of identity between its different constituents; and since we can predicate various attributes of one and the same substantive, we say that there is a relation of identity among their differences. In each of these senses, epistemological dualism means not only to deny that the datum can properly be identified with the real object, but also to assert that their non-identity is a positive truth about the nature of knowledge. What is immediately presented in perception has no identity with anything which we may suppose to

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exist as a *part* of the real object perceived, in the sense that a surface might be said to be identical with a part of a solid. And nothing which characterizes the content of immediate awareness stands in a relation of identity with any of the *attributes* of the real object, in the sense that the length of the radius is identified with one of the properties of a circle. Is it, we may ask, incumbent upon the critic of dualism to establish the identity of datum and object in either or both of these two senses? According to Mr. Lovejoy (and I am willing to accept his expert opinion on the subject), it is this very attempt that has been a principal factor in the contemporary revolt against dualism.

In the first phase of the revolt, the monistic realist had to prove that "the visual percept is identical with part of the perceived object, which is to say, also, that it is a true part of the material world," but his attempted proof is incompatible with the admission of the finite velocity of light.[5] In the second phase, we find the "objective relativist" insisting upon the relativity of attributes and the objectivity of relations. But he, too, in the person of Mr. Murphy at least,[6] wishes to prove that the datum "belongs" to a real object or event as an attribute or an adjective belongs to its substantive. "This attributive objectivity," Mr. Lovejoy assures us, "is the essential matter" for the objective relativist.[7] Turning to the next phase of the revolt we encounter Mr. Whitehead's doctrine that "perceptual objects" are "Aristotelian adjectives" of the events they qualify, and control "the modes of ingression of sense-objects in nature" by exhibiting themselves in relation to percipient events. Sense-objects (what Mr. Lovejoy would call "data") "only simulate adjectives for an observer who in his intellectual analysis of the situation forgets to mention himself." But this is simply grist for Mr. Lovejoy's mill. Finally, one of Mr. Russell's earlier positions is criticized as an attempt "to reduce perceptual content to identity with 'parts of the material world' which we have reason to believe, or can believe, to exist."[8] Appearances or "aspects" are regarded by Mr. Russell as actual parts, of the object, "'in the sense in which a man is part of the human race'; and over and above the

[5] *Ibid.*, pp. 61–62.

[6] Who had written, in an article from which Mr. Lovejoy quotes, "The denial that qualities belong to existence is the denial of knowledge and rests on a quite obvious confusion of 'logical types.' An adjective never occurs in the same way as a substantive, and it is not possible to make either do the work of the other. . . . In general so-called sense-data are the characters which belong to events in relation to a human body." *University of California Publications in Philosophy*, 1926, pp. 202, 204.

[7] *Opus cit.*, p. 107.

[8] *Ibid.*, p. 206.

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sum of the appearances there is no 'real' object."[9] It is safe to conclude, therefore, that the kind of identity which Mr. Lovejoy is anxious to deny is the identity of the datum with a real object, either as one of its parts or as one of its attributes.

With regard to the class of evidence we are considering, I fail to see how the "displacement" of the datum has any demonstrative value whatsoever concerning the identity or non-identity of the datum with a real object. In the context of the perceptual situation itself, I am unable to attach any genuine meaning to the statement that the "appearance" of the object is or is not a part or an attribute of the object itself. A situation is supposed in which an object, answering to a certain description, appears or presents itself to a percipient. It is further supposed that this appearance or "presentment" is also characterized after its own fashion. Thus, there is by hypothesis a round penny which appears to me in a way that I can describe as elliptical. What evidence is there in such a situation which could possibly enable me to say whether anything in the character of the appearance is or is not identical with this or that part, with this or that attribute of the object perceived? Unless there were some prior reason for supposing that a datum is a kind of *existence* having certain properties that are incompatible with the properties of the object, considered as another kind of *existence,* no question of their identity in either of the two senses could be relevantly asked or answered at this level of analysis. Mr. Lovejoy himself has rightly ruled out such an existential differentiation from what is a strictly epistemological inquiry. We are concerned with the *relation* between the datum and the *cognoscendum,* not with the nature of each as a separate event or existence. Now, the discussion of this relation in terms (*a*) of a whole and its parts, or (*b*) of a substantive and its attributes, seems merely irrelevant for the following reasons.

(*a*) In the given situations, it is implied that no discrimination of the object into its several parts has occurred. The *whole* object is supposed and the "displaced" datum is assumed to be the appearance *of* that object and none other. Since no specific part of the object is supposed to have been singled out for comparison *within the perceptual situation itself,* there is no evidence here to determine whether the datum as given is or is not identical with any part of the object.

(*b*) The relation between a substantive and an attribute is primarily a formal relation between the terms of a proposition. This presupposes interpretation of a given perceptual situation and the logical articulation of its meaning in the forms of discourse. It is

[9] *Ibid.*, p. 194.

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a mistake to read these results of later analysis back into the "pre-analytical" situation in order to account for the conditions which make them possible.[10]

There is common agreement that, in all of these instances, the "displaced" datum is the way in which the supposed real object "looks," "seems," or "appears" under certain conditions of perception. Furthermore, it is agreed that these words "looking," "seeming," and "appearance" denote a relation between the datum and the object whereby the former *indicates* certain characteristics of the latter to a percipient. In Mr. Lovejoy's metaphor, the datum acts as "deputy" for the object. Let us call this relation between a datum and its object an *indicative* relation. It is exemplified in the relation between a symptom and the cause of a disease, between a clue to a crime and its perpetrator, or between a sign-post and a destination. We may recognize this for the unique and irreducible relation that it is without being committed to any theory about "the qualitative and existential identity" of the indicator and the *indicatum*. I am not saying that the datum may not *also* be related to the object as part to whole, that it may not *also* be predicated as an attribute in the terms of a proposition. Parts and attributes may on occasion be given as signs or indicators of the wholes and substantives to which they belong. But the consideration of these whole-part and attributive relations has no more to do with the nature of the datum in its "givenness" than has the material of a sign-post to do with its function as a sign. A lighted window indicates a house to a traveller at night, and in this case the datum happens to be a part of what it indicates. A footprint indicated the presence of another human being on Crusoe's island, although the footprint was neither a part nor an attribute of the man Friday.

In some sense, however, the datum *belongs* to the object which it indicates and it is the ambiguity in this notion of "belonging" which is mainly responsible for the controversy about their identity or non-identity. The notion of a *property*, based upon the subject-predicate relation in propositions, is confused with the notion of a *sign*, based upon the indicative relation in perception. In most instances, propositions about the character of the indicator have no logical identity with propositions about the character of the indicatum. We need not on this account deny that the former *belongs* to the latter in the only sense in which it can belong to it,—namely, as pointing to properties that can be assigned to it in subsequent judgments. Hence, the "displacement" of a datum should not be interpreted as its detachment or separation from the object to which it points. As we have noted, the question of its separate existence

[10] Cf. J. Loewenberg, "Pre-Analytical and Post-Analytical Data," this JOURNAL, Vol. XXIV (1927), pp. 5–14.

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is irrelevant to the description of the datum as such. The "displacement" is a discrepancy among the suggested *meanings* of the datum as a sign, not a disjunction among the assigned properties of the object as signified. It is indicative, not predicative. The possibility of error and failure to read indications aright merely shows that the meaning of what is given in perception is always more or less tentative and problematic. In cases of spatial and temporal "displacement," this aspect is more striking than usual because the data indicate conditions in the perceptual situation which we do not habitually take into account in forming our judgments about the objects. There is, so far as I can see, no genuine problem here concerning the *identity* between a "subjective" datum and an "objective" existence. The epistemological problem has to do rather with the nature of *identification,* whereby the tentative, incomplete meaning of the datum as a sign gets established or rejected in the total meaning of the object as interpreted in subsequent judgments.

D. S. MACKAY.

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## ON THE INSTRUMENTAL ANALYSIS OF THOUGHT

PROFESSOR Dewey's analysis of reflective thought is viewed by a great many educators as an actual psychological one; that is, the five "stages" are taken to be temporal developments in the process of solving a problem. This view, however, may not be attributed to Professor Dewey. In answer to a criticism made of the analysis by Mr. Buermeyer,[1] who took the analysis to be a psychological one, Professor Dewey disavows such an interpretation.[2] But he argues for retaining the analysis to distinguish certain "logical" movements of thought. Now one may readily accept the general instrumental theory, which theory holds that the subtle intra-organic processes called ideas are a set of tentative trials whose function in problem solution is an economical substitute for overt motor trials. But further analysis, which yields the finer distinctions of five separate "stages" in the process of thinking, does not share, and is not claimed to share, in this practical basis. The stages are admittedly not an actual methodology. They are only a "logical" analysis, the nature of which will be later described. And it is against the value and validity of these remaining "logical" distinctions that the writer makes so bold to argue. The value of the

[1] Laurence Buermeyer: "Professor Dewey's Analysis of Thought," this JOURNAL, Vol. XVII, p. 673; hereinafter referred to in the context as "B."

[2] John Dewey: "An Analysis of Reflective Thought," this JOURNAL, Vol. XIX, p. 29; hereinafter referred to as "D."

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analysis is waived with the renunciation of the applicability of the analysis to practice; if we are to follow the first principle of pragmatism as set down by Peirce and James, we must question all logical distinctions which do not ground themselves in practical results. And the validity of the analysis is contested by arguments to be submitted against the "logical" distinctions which Professor Dewey retains. It is here recommended that the distinction of ideation as a tentative trial, in contrast with the final motor testing as the end-result of problem solution, is the one incontestible logical distinction which describes an actual division of labor, that this division of labor has its origin and grounds in far simpler behavior mechanisms, and that this distinction should be emphasized rather than any detailed minor distinctions which may be suggested.

The first "step," which is the occurrence of a problem, Professor Dewey admits not to be a "stage," but only the occasion of thought, and says that, "Not even the occurrence of a problem need come absolutely first in time" (D—p. 30). The second "step" was put in *How We Think* for pedagogical purposes, merely as a precautionary measure against the acceptance of irrelevant suggestions. "This 'step' is not however different in critical thinking from the step of a tentative or hypothetical adoption of a suggestion" (D—p. 32). And in critical thinking, he says, "I accept not merely Mr. Buermeyer's criticism of temporal separation of steps, but his conclusion regarding the fusion into one process of induction, deduction, and experimental testing" (D—p. 30). Thus, with one exception, is all distinguishing of "stages" relinquished. This exception is a "logical" distinction, and it is held between the third and fourth "movements" of thought. He maintains that, "the more we become aware of the identity of psychological process, the more the difference in function becomes significant" (D—p. 37). To establish this "difference in function" between these two movements is Professor Dewey's fundamental argument. On the contrary, it is the writer's contention that the practical and valid distinction of movements in problem solution is not this one claimed between these two movements, but a distinction between a general ideation process on the one hand (which may not well be divided up into a first, a second, a third, and a fourth stage), and on the other hand a confirmatory process of motor testing (which would correspond to Professor Dewey's fifth stage).

In support of his logical distinction Professor Dewey makes the following arguments: The third stage is induction, and the fourth stage is deduction. The traditional distinction between induction and deduction is that they are, respectively, movements from the particular to the general and from the general to the particular.

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He rejects this distinction, however, and says: (1) "Induction I take to be a movement from facts to meaning; deduction a development of meanings, an exhibition of implications" (D—p. 30). "Just as induction employs selected matter-of-fact information in forming a hypothesis, so deduction employs a system of previously formed conceptions or meanings or relations" (D—p. 36). (2) A second discrimination seems to be that inductive suggestions are uncertain; they do not have the obvious rôle of subsumption as an example under a rule, and they are applied to new situations rather than to old and therefore determined ones (D—pp. 34–35). (3) Another argument is that since hypotheses are often contradictory, they can not be "deduced" from the same situation or "grounded in identical premises," but "are suggestions springing from different sources" (D—p. 35). Finally, (4) the distinction between the two logical movements is one of logical purpose; it "concerns the results of process." "A man may go from New York to Chicago and from Chicago to New York upon the same tracks, in the same car and with the same engineer. But the purpose, the outcome is different" (D—p. 37).

Attention should first be called to an ambiguity in the general use of the term "deduction." In may be (*a*) simply rule-of-thumb subsumption of cases to orders already established, or (*b*) the original working out, developing, and organizing of the orders themselves. Both Mr. Buermeyer and Professor Dewey agree that the former is not genuine deduction. "Either the implications are unfamiliar, and must be unrolled tentatively, with constant reference to the conditions to be met; or they are familiar, a matter of routine, and then explication is the work of habit or mechanism," says Mr. Buermeyer, and the latter operation "could conceivably be turned over to an adding machine" (B—p. 680). And Professor Dewey says in agreement that, "while the development of a content of a hypothesis uses these types of order, it can not be identified with them, since it is partial or selective" (D—p. 36).

Though induction and deduction are admitted not to differ in actual psychological process, they are said to differ (4) in purpose, outcome, or result. Just what this difference in purpose might be is not defined by Professor Dewey. Hence, one may well ask, Is not the purpose of all reflective thinking and all its steps stated to be the solution of a problem, and is not every "step" directed toward this end? Suppose the purpose of induction to be the discovery of ideas and the purpose of deduction to be the elaboration of ideas. Then we must go further and ask, What is the difference between discovery and elaboration? The answer is that discovery proceeds from fact-to-idea, whereas elaboration proceeds from ideas to further

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ideas. This answer, however, takes us back to the first argument; that is, in this case argument (4) reduces to argument (1), which will be considered later.

To assume the purpose different and the movement identical is only an assumption; it is just as likely that the opposite be true. Using Professor Dewey's own illustration, we find that a man may go both to New York and to Chicago seeking the same end, say medical treatment, and traverse any number of different routes. Thus also in reflective thinking the problem may remain constant and the purpose to solve it the same, while the method of approach may be varied indefinitely. Of all possible variants in problem solution, the purpose should be the most constant characteristic of every step.

The case (3) in which Professor Dewey argues that hypothetical suggestions may be and usually are contradictory, and that contradictory conclusions can hardly be deduced from identical premises, is readily met. For since the "identical premises" of the "problematic situation," in so far as the situation is problematic, have contradictory elements,[3] it would be strange indeed if the suggestions could be other than contradictory. And does Professor Dewey mean to argue that the mark of a deduction is its validity? Then what would become of false deductions and true inductions?

Argument (2) was that induction does not have certainty; it lacks the validity of subsumption. We have seen, however, that both Mr. Buermeyer and Professor Dewey agree that rule-of-thumb subsumption is not deduction. Consequently, there must be found some other mark to describe deduction as contrasted with induction. Also, to say that only inductions apply to new situations is to imply that deduction does not apply to new situations and to the problematic thinking which they generate. Finally, there is the implication that only deductions can be relied upon to give us certain truth and that inductions lead us only into speculation and not into knowledge. This implication, however, would seem to defeat the fundamental intent of the instrumentalistic movement.

This leaves us with the prime distinction, to which other arguments tend to reduce themselves. To evaluate this we must turn to Professor Dewey's instrumental definition of fact and idea. It is a fundamental thesis of instrumentalism that fact and idea are not to be differentiated in themselves as ontologically different, that neither is a privileged or final category of reality; they are *functionally* different, according to their *relative use* or *purpose* in an act of thought (E—Chapter II). "What is insisted upon is the relative, instrumental, or working character of the distinction—that it *is* a *logical* distinction, instituted and maintained in the interests of

[3] John Dewey: *Essays in Experimental Logic*, p. 53; this volume hereafter referred to in the context as "E."

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intelligence, . . ." (E—p. 237). To the degree then in which elements of the problematic situation are inductively significant they will have a provisional nature, and to the extent in which a given element is held to be provisional, it has to that extent the rôle and the nature of an idea (E—p. 225). Hence, if inductions come from elements of a provisional, problematic nature, and if such elements in the thought situation are what we mean by ideas, how do inductions from idea elements differ from the deductive movements, which are described in the same way? That is to say, if inductions are found to spring from the elements of the thought situation defined as ideas, how do these inductions differ from deductions? The argument can be put in a form which approximates an enthymeme:

Induction is a movement from provisional elements to ideas;
Provisional elements for the objective instrumentalist define ideas;
A movement from ideas (or provisional elements) to other ideas is the development of ideas;
And the development of ideas is the definition of deduction.

Finally, it can be shown that problems *begin* with ideational activity; one must think before one has problems. Simple pain or displeasure does not define the occurrence of a problem; some intelligent thought is required from the first to know what is wrong, to recognize and describe a problem. The term means not a physical but an intellectual frustration. Hence, inasmuch as thinking does not start with facts but with ideas, how can we say that inductions spring from facts and that deductions do not?

The purpose of the writer is not to confuse into one unanalyzed process all logical developments of thinking. Rather, it is to emphasize certain valuable distinctions that instrumentalism has already made. What is here suggested is that we have a more fundamental division of labor in the problem-solving process, namely, a division in labor and significance between the step of *hypothesization,* taken in its entirety as a tentative trial, and the step of *confirmation* or testing as a final or consummatory trial. Dividing up the process of hypothesis-making into two stages (the occurrence of suggestions and the elaboration of suggestions) seems to be a secondary, hair-splitting division as compared with the primary and more obvious difference found between a tentative trial and its confirmation in action.

How might we then distinguish idea from fact in such a manner as to avoid the implicit circle found above, yet in such a way that we might keep a division of labor for our two steps in thinking based safely upon it? Professor Dewey himself gives us elsewhere the definition we need: "Images are not made of physical stuff. They are qualities or *partial* organic behaviors which are their 'stuff.' They

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are partial because not fully geared to exteroceptor and muscular activities, and hence not complete and overt."[4] Here we have ideas, as organic responses, marked by their partial nature, which serve to distinguish them from fulfilled responses. The conceptual is hence not properly opposed to the factual, for the latter is simply a broader category covering more phenomena than organic responses; but rather it is distinguished from the fulfilled or overt response. And it is precisely this distinction which underlies the difference in function between the act of hypothesizing and the act of testing or confirming. Thinking is begun by means of tentative, more economical substitutes for actions. But thinking is consummated pragmatically; it is tried out and fulfilled in overt actions. Hence we get two main divisions of labor for problem-solution, and we have two corresponding logical functions for them. The first is an ideational movement, and its function is that of a tentative trial, a preliminary and economical exploration; the second is the *act*-ual movement, and its function is that of confirmation, or in many cases, consummation.

There is a growing body of evidence demonstrating the existence of response mechanisms whose nature is that of a trial adjustment and whose function and biological significance is one which is purely preparatory. Such overt but purely preparatory responses assume the same rôle and function in animal behavior as ideas do in human behavior, and they give us some insight into the origin and nature of these partial responses which we call ideas. It is the existence of these preparatory responses which makes possible a significant division of labor among overt muscular responses themselves similar to that described by Professor Dewey in human thinking. We find Pavlov, for instance, describing and experimenting with what he has termed an "investigatory reflex," a complex bodily response of orientation with sensory and motor exploration, a response whose function is purely preparatory.[5] It is a response which is tentative and which is often hinged upon a consummatory response of pursuit, retreat, or alimentation. This sort of preparatory response is found almost universally. In the primates we have an elaborate set of manipulatory responses; the animals are continually trying out things, pulling them to pieces, observing them, pushing them about, tasting them, and exploring them. We have both motor or manipulatory explorations and sensory explorations, both of them being purely "intellectual" in that of themselves they do not supply a physiological need and hence have no significance taken by themselves. They serve as problem-solving activities; they

[4] John Dewey: *Experience and Nature*, p. 291, Open Court Publishing Co.
[5] I. P. Pavlov: *Conditioned Reflexes*, 1927, Oxford University Press.

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are the original *motor ideas,* for it is such a repertoire of responses, directed upon some key feature of a problem situation, which copes with the situation and which eventuates in some final consummatory response such as eating or mating. The recent work of Raymond Dodge[6] supplies some excellent studies of certain simple muscular responses which upon analysis yield, within the one response, a preparatory phase introducing a second phase which we may take the liberty to call confirmatory (Chapter VIII). That is to say, we find not only a set of responses functioning as preparatory for another entirely different set of responses but also, within the same set of responses, one movement preparatory for another. For instance, in the pattern of ocular pursuit of a moving object, there are two kinds of responses: first, the quick saccadic eye movements which progressively approximate the position of the moving object, and then the second form of pursuit which is a smooth glide. If the oscillating object is moved more rapidly, a series of quick saccadic movements tend to replace the glides; and finally, if the oscillations are accelerated still more, both the glides and the saccadic movements are replaced by still fixation. Such examples as these indicate that, though the more detailed analysis of problem adjustment and solution be open to criticism, the two main functional divisions of labor do stand, and they may be traced all the way back to the investigatory and preparatory responses of animals to a still simpler presentation in responses such as reflex eye movements.

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## EPISTEMOLOGY AND SYMBOLISM

A RECENT theory of knowledge based on mathematical logic claims for itself a distinct advance over past theories just in its consideration of the theorems of logic as rules for tautological transformations. We fail to see how it is possible to develop anything of a sound epistemology along these lines. How can the tautological structures or equations be considered as prelimiting the propositions when they are discovered by a special sort of controlled experiment, that of attenuation of propositional meanings? And, since it is only in returning to the proposition its abstracted numerical content whose infinite nature renders true definition impossible that the tautology is given point and purpose, does not the logical positivist instead of combining empirical facts with true logic forms just come back to the proposition he started from?

[6] Raymond Dodge: *Conditions and Consequences of Human Variability,* 1931, Yale University Press.

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There is this point also in regard to the logical positivist's account of the union logic makes with experience. What appreciable difference—we are concerned now with logical positivism's claim for novelty of interpretation—is there between the infinite regress Aristotle believed he discovered in the fact of a resemblance existing between the Platonic Idea and the phenomenon, and the unending hierarchy of similarities manifest in the theory of a structural similarity operative between the relations of elements in a fact and the relations of words in a proposition? The similarity, we are told, can not be expressed by the same language, but would require a further proposition in possession of a similarity between it and the similarity. And so on with a higher general above both *in infinitum*. The father of logic, by the way, wholly condemned the resemblance theory for its contradictory implications; the logical positivist on the other hand holds uncritically his similarity-of-structure theory admitting, however, that it carries with it the notion of an infinite series. So though there is little difference in the infinite regress itself there is evidently a real difference between Aristotle's logical forms and those accepted by the logical positivist.

The reduction of propositions to structural tautologies is the result of abstracting from the propositions in question everything but their quantitative relationships, and thus by the fact that our simplest integral apprehension *is* numerical in character the equations really do represent the very outposts of meaning. But is there not both fallacy and mischief in taking these resultant equations for representations of actual propositional forms? The fallacy, as will be shown immediately below, appears in the idea that mathematical symbols have a possible reference to living language. These symbols are the result of a double abstraction which has pushed their original points of reference to a remote background—so remote in fact that for practical purposes they are lost sight of altogether. And the mischief to be found in taking the equational reduction for true representation of the proposition appears in the suggestion that attenuation of knowledge-content exhibits knowledge-form.

The laws of language are prohibitive of such interpretation, i.e., of the equation representing propositional structure. So far from simplifying the structure of the proposition for purposes of convenience for study, the use of symbols for terms actually results in a new complex to be taken care of. For there is a duality in language itself which is analogous, and not identical, to that of knowledge. Corresponding to immediacy and demonstrability (or knowledge by acquaintance and knowledge by description) as sides or aspects of knowledge, language shows either a predominant contextual aspect or a predominant referential aspect, according to whether the in-

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terest is in the content or in the method; and in all active language both the contextual and the referential sides are present in varying degrees of explicitness. Contrary to some popular beliefs the learning of a foreign language is far from being a mere mastery of new symbols or word-references. The modern foreign-language teacher who stresses too much the referential side of language by strict dependence on translation is guilty of ignorance of the vital function of context; but the one who sticks exclusively to the direct method in his teaching whereby the contextual side of language is overstressed errs as much on the other side. The skillful instructor, whether he has gone into the philosophy of language or not, combines the translation and the direct method because he sees that this combination produces the results he is after. The old lady who disgustedly gave up her study of French because it seemed to her too absurd to refer to an apple as a "pomme" is on a par with the farmer who discovered that "the Lord was right when he named hogs." Neither one saw the respective English words "apple" and "hogs" as having *both* referential and contextual sides; both the lady and the farmer had evidently made mental reservations of context for "apple" and "hogs" which were stressed to the exclusion of their referential value. But while the former could not discount the arbitrary character of the French symbol for "apple" the latter could not see beyond some contextual aspect of "hogs." For in ordinary usage language forms are taken without question for the content involved in their contexts. The moment, however, that method or reference is brought under consideration the language form is treated as referential or symbolic. Accordingly the symbols used in mathematical logic are not counters for propositional terms, though to the uninitiated they may appear to be. They are actually only counters for word-symbols for propositional terms. In the translation of meanings or contents into any symbols whatever the arbitrary character of these symbols must be discounted by explicit reference to their originals every step of the way. But in the case of the mathematical symbols used in equational logic, explicit reference to the propositional terms they are derived from is made impossible by their double remove which does not and can not take account constantly of the original meaning relations. For this reason these counter-symbols take on the character of significants in their own right. Since they are themselves language forms they must find their required meaning reference elsewhere—as they do find it in pure mathematics.

To be sure, the adventure into mathematics by way of the proposition is fascinating. But does it really tell anything about the proposition that could possibly be of revolutionary import to the

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epistemologist? Instead of being formulae for the construction of propositions is it not true rather that the equations of mathematical or symbolic logic only signify new meaning departures from given propositions which have their sole motivation in the particular interest of the investigator?

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## BOOK REVIEWS

*General Logic.* RALPH M. EATON. New York: Charles Scribner's Sons. 1931. Pp. 630.

Professor Eaton has chosen for this text a singularly appropriate title. The book discloses a variety of meanings for the casually ironic ambiguity of its being called "general" logic. The generality might apply to the readers; it is definitely published as an introductory text, but ought to be, in parts, of considerable interest to the specialist. By characterizing the book as a "survey" the subtitle calls attention to its inclusiveness. However, there is nothing of the vague approximation to precision that is commonly found, and hence expected, in most works that boast of being "surveys." The author has taken particular pains to omit no pertinent field within the expanding domain of logic. Finally, the adjective "general" is justified by Professor Eaton's conception of the nature of logic and his method of presentation. The discussions are concerned with principles, as such. There is no effort to describe an applied logic, or to show how the use of logic may lead to glorious results in the sciences. Too often the teaching of logic is hampered by the wealth of arresting (but diverting) illustrations that the writers of textbooks borrow from each other and fish out of their private collections. Professor Eaton is not unduly stingy with illustrative material, but what he includes is simple and often repetitious. After all, the old stand-by "all men are mortal" is about as good as any other proposition; it can be put to many uses, and its material implications are not entirely irrelevant.

Logic is defined as "the science that exhibits all the relationships permitting valid inference that hold between various kinds of propositions considered merely in respect to their form" (p. 8). This definition is the core of a rather long (70 pages) but unusually adequate introductory section in which the expected textbook variations on the theme, "logic is something that goes on in our heads," are considered and discarded. Logic is neither a normative science, an art of valid thinking, nor a branch of psychology. Its subject-matter is not the judgment but the proposition, for judgments are never

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true or false; they simply are what they are (psychological processes). That a realistic account of logic suggests delicate and difficult philosophical questions Professor Eaton admits, although he does not find it advisable to side-track the student by discussing them.

It seems that what is often called "conscious and deliberate thought" is seriously in need of a new realm of inquiry in which to hide itself. The realistic logician sends it to the psychologist, but the behaviorist will have none of it, and the psycho-analyst treats it as the dubious child of rather nondescript parents. Even the logicians whose prefaces are much concerned with thinking soon find that objects are more amenable to logic's laws.

However, it is in terms of logic defined as a science of structure that Professor Eaton encounters and deals with logical difficulties. The problem of the *petitio principii* fallacy in the syllogism, especially in connection with Mill's contentions, receives a notably able consideration, in which the author maintains that Mill's objections are based on (1) an erroneous conception of the nature of a general proposition, and (2) a confusion between logical relations and the extent of our knowledge. The question of the validity of the traditional forms of immediate inference is developed as one phase of the problem of the assumption of instances in universal propositions; other aspects of this problem receive a detailed examination in various parts of the book. The concept of the null-class, frequently employed, becomes a basic point of departure between the traditional criteria of validity and the revised notion of implication required by mathematical logic.

Section II treats of the traditional Aristotelian logic much more fully than any other recent text (280 pages). The plan is to present the syllogism and other types of inference in the usual way, and to discuss separately the problems to which each type gives rise. Reduction of other figures than the first to the perfect figure is described in detail. Following this there is a well ordered treatment of the antilogism, patterned after Mr. C. I. Lewis's exposition of Mrs. Ladd-Franklin's method. A rather large amount of space is devoted to a highly involved account of the classification of terms, which, like most treatises on the subject, affords little illumination. After asserting that the study of fallacies does not belong strictly to logic, Professor Eaton justifies his excellent treatment of them as "types of oversight" by saying that they tend to throw actual logical structure into high relief.

Part III, on mathematical logic, follows the plan of Whitehead's and Russell's *Principia Mathematica* with, of course, considerable simplification. It contains an outline of the calculus of propositions,

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the logic of propositional functions, and the class calculus, sufficiently complete to produce, in the conscientious sophomore, a mild insomnia that should last him the better part of a semester.

Professor Eaton's treatment of mathematical logic is valuable for its demonstration of the connections between the traditional syllogistic procedures and the logical developments of the last seventy-five years. In the calculus of propositions, for example, it is shown that the proposition (25) $\vdash : p \supset q \cdot q \supset r \cdot \supset \cdot p \supset r$ is analogous to a syllogism in *Barbara,* and furthermore, that the proof of the proposition involves the same principles that produce *Barbara* as a valid syllogism (pp. 375–376, 381). Again, in the class calculus, considerable attention is given to showing that unquestionable syllogistic moods fall under formulæ of the logic of classes, whereas the questionable moods (those which draw a particular conclusion from universal premises: *Darapti, Felapton,* etc.) require the assumption of instances, a principle not necessary to the class calculus.

In addition to its being a thorough textbook exposition of the content and procedure in mathematical logic, this section supplies the need for a precise rationale of the genuine connections among traditional logic, pure mathematics, and symbolic logic. The securing of both of these values is facilitated by the introduction of simpler symbolic procedures fairly early in the first sections of the book. This has, of course, a definite teaching advantage; the student is rather gently courted at first, his taste for symbols becomes stimulated, making his debut into the calculi neither a cold shower nor an irrelevancy.

There are a few instances in the presentation of the calculus of propositions where it seems that sufficiency has been somewhat sacrificed to keep the survey from becoming too long. Proposition 18 (the numbering differs from that of the *Principia Mathematica*) is stated $\vdash : \cdot p \cdot \supset : q \cdot \supset \cdot p \cdot q$ (p. 380). The preceding demonstrations have indicated that later propositions can be proved in terms of earlier propositions and definitions; this proposition, however, requires for its proof another proposition that occurs in the Appendix as Proposition 29 (p. 607), although the calculus ends, in the text, with Proposition 28. To make the situation still more confusing, the author says (after stating Proposition 18), "we omit the proof of this principle [18], but it is interesting to see how it must be used in the demonstration of 17."

Following a very brief summary of the theory of logical types and a discussion of the relation of logic and mathematics, Part III ends with an excellent bibliography of the more easily available works on mathematical logic.

"The study of the logic of induction is not the study of the de-

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tails of scientific technique" (p. 481). The author's consideration of induction (Part IV) is based on this premise, and while it includes most of the material one might expect (Mill's Canons, probability, analogy, etc.), it forms a somewhat minor part of the text. Except for a careful analysis of Mill's "Canons of Causation" the most interesting discussions are concerned with the nature of induction itself. For logic, at any rate, induction, when distinguished from inference, is, as Mr. Bertrand Russell says, "a mere method of making plausible guesses." Summarily stated, the problem of induction is "to find a way of showing that the general conditions of some system are fulfilled by a set of particulars assumed to belong to the system, when it is not known that these are all the particulars in the system" (p. 484).

Professor Eaton's book is, for the most part, truly admirable. As a text it provides probably the only really "general" logic available. As an introduction to logic it is an ambitious project; if it turns out, occasionally, to be an introduction to metaphysics as well, the meeting is unlikely to take place at the tradesmen's entrance.

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*The Logic of Science.* HAROLD R. SMART. New York: D. Appleton and Company. 1931. Pp. vii + 237.

Mr. Smart's "logic" is not a compendium of rules for the attainment of truth. His "science" is not a quest for any value except truth-value. His "philosophy" is somewhat disdainful of cosmological inquiries, and may almost be identified with logic. Mathematics is not a purely deductive science dealing with non-experiential relations, but is a science of quantity, in many points requiring inductive procedure and possessing significance only so long as it maintains contact with empirical reality. The realm of the real is greater than that of the existential (the reviewer doesn't know what this means), but science deals only with the latter. The physical sciences, after passing through a stage of rather futile attempts at explanation by means of classifications based on qualitative resemblances and differences, are now engaged in the more fruitful enterprise of looking for laws. On the other hand, the biological sciences should not presume to become domains of causal law, but should make it their chief work to discover natural kinds, which are gradually undergoing modification.

Apparently the physical sciences are to be delivered over to Democritus, while the biological sciences are still to render homage to Aristotle (p. 120). The concession that natural kinds are not fixed, but are undergoing modification, would seem, however, to

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make the rule of Aristotle, even in the latter realm, somewhat shadowy. This contrast between physics and biology—a rather surprising contrast, in view of the actual goals and procedures of contemporary biologists—is made in the interest of the autonomy of the sciences, or at least of the several groups of sciences. Physics, biology, psychology, etc., should each insist upon the possession of problems and methods of its own; and philosophy, in turn, should maintain its independence of the sciences.

"A real synthesis of the sciences," says Mr. Smart (p. 214), "must acknowledge the relative independence of each science, and in particular must not require of it a contribution to some mythical cosmological system." But why stigmatize the proposed cosmological system as mythical? Are we to understand that all cosmological systems must in the nature of the case be mythical, and that cosmology accordingly has no proper place in philosophy? Or is the search for order, harmony, beauty, for a cosmos beneath or behind apparent chaos, to be carried on under some other name? In view of the history of thought, it seems too much to expect that philosophers will henceforth forego the satisfaction of system-building; and if systems are to be built, one would suppose that the only way to escape from mythological constructions is to insist upon checking and testing all proposed cosmologies by reference to the results of systematic and painstaking investigations, in whatever fields these have been carried on by men who are zealous for the attainment of truth. In other words, just as the generalizations of any particular science ought to be treated as hypotheses which stand or fall in accordance with their agreement or disagreement with the relevant facts, so the constructions of the cosmologist ought to be treated as hypotheses which stand or fall in accordance with their agreement or disagreement with the results arrived at by the special sciences.

This, however, may not be far from Mr. Smart's own view of the relation between philosophy and the sciences. Unfortunately, he has not developed the topic as fully as might be desired, but has contented himself almost entirely with negations. Perhaps all that he really means is to protest against taking some one science and treating it as if it were the whole of philosophy. And this "fallacy of idealization," as he calls it (p. 198), has indeed been entirely too prevalent. It must be admitted that certain philosophers have shown a tendency to seek the explanation of all things in terms of some principle or theory which happened to be fashionable at the moment in one or the other of the sciences. Thus nineteenth-century thinkers, under the spell of "evolution," often supposed that everything could be explained by giving an account of its history; while

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many contemporary thinkers, under the spell of "relativity," seem to be trying to mathematicize everything and anything.

Nevertheless, much as we may sympathize with the protest against such "idealizations," it remains clear that the only way to determine whether ideas which have been found fruitful in some one department of thought will or will not be fruitful elsewhere is to try them out. In each case, someone must be permitted to extend the application of the idea as far as he can. To what extent a given "science" will be found to be autonomous—Mr. Smart is careful to speak of only *relative* independence—is a question for empirical determination, and not for dogmatic assertion *a priori*. Assuredly, there is nothing sacrosanct or even logically necessary about our current division of labor among the special sciences. There is obviously no sharp line between astronomy and physics or between physics and chemistry; and it is futile to insist upon a definite cleavage between the "physical sciences" on the one hand and the "biological sciences" on the other. Scientific research is more likely to be fruitful if it sets out with the idea of discovering as much unity and interrelatedness as possible, than if it decides beforehand that there are unbridgeable chasms and irreducible differences between the various sciences. Indeed, in recent decades some of the most brilliant work has been done in regions where the special sciences overlap; as in astrophysics, in physical chemistry, in biochemistry, in psychobiology, etc.

Although Mr. Smart insists that there is a difference in principle between the living and the non-living which "no amount of subtle argumentation" can explain away (p. 152), he does not defend the doctrine of the vitalists. In periods of rapid progress in the physical sciences, it is natural to believe that if we just knew enough we should be able to explain biological processes by means of mechanical laws. But "a fuller realization of the amazing complexity and distinctive marks of living things, has led certain contemporary scientists to the view that neither the mechanistic nor the vitalistic theory does justice to the facts" (p. 155). Vital phenomena should be treated "in terms of the basic idea of the organism as a whole." This Mr. Smart would call a "teleological point of view"; but one may question whether General Smuts' adjective "holistic" would not be more appropriate and less conducive to misunderstanding.

In conclusion, although the reviewer is not a pragmatist, he is impelled to add a word in behalf of fair play for this maligned sect. The value of science, or of any particular piece of research, can not be measured by its possibility of application; yet it seems a little far-fetched to insinuate that what vitiated the work of the

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alchemists and astrologers was their interest in "prediction and control" (p. 14). It is scarcely necessary to say that astrology and alchemy came to be regarded as pseudo-sciences, not because they were utilitarian in motive, but because their fundamental assumptions did not work.

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*Selections from Medieval Philosophers.* RICHARD MCKEON. New York: Charles Scribner's Sons. Vol. I, From Augustine to Albert the Great. 1929. xx + 375 pp. Vol. II, From Roger Bacon to William of Ockham. 1930. xviii + 515 pp.

In spite of the fact that scholars, the majority of whom have not written in English, have been engaged in the study of medieval philosophical texts since the early part of the last century, little attempt has been made to present their material in a form adapted to the English-speaking student. The manuals of scholastic philosophy and the few treatises on isolated figures, such as St. Thomas, which have been published in English, frequently have imposed upon them some special philosophical or theological coloring, or have been based upon insufficient and false data. What is worse, the Augustinian and Aristotelian terminology, in large measure alien to us, has been left unexplained: too often, the reader's familiarity with the doctrinal context itself has been taken for granted. That such an assumption is to-day scarcely warranted, is patent.

Professor McKeon's two volumes of *Selections from Medieval Philosophers* mark the first attempt to provide an introduction in English to the field of medieval philosophy reasonably free from the defects which have been mentioned above. This is accomplished in part through translations of various texts centering on the problem of knowledge; in part through introductions to each of the texts, through two general introductions (one to each volume), and through a glossary of philosophical terms.

Since, as Professor McKeon tells us, none of the texts had been translated into English previously, it should be proper to speak of them first. The selections extend over a period of some 950 years, for the first translation is taken from St. Augustine, who lived in the fifth century, and the last from William of Ockham, who lived in the fourteenth. The intermediate portions include, among others, such diverse figures as Boethius and Scotus Eriugena, St. Anselm and Peter Abailard, Albert the Great and Roger Bacon, St. Thomas Aquinas and St. Bonaventura, Matthew of Aquasparta and Duns Scotus.

To outline what the problem of knowledge itself is, would appear

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to be no difficult task. Boethius makes what seems to be a clear statement concerning it in his introduction to his commentary on the *Isagoge* of Porphyry. This statement of Boethius' is used as a basis for commentary or discussion either directly or as the frame in which the problem is set; i.e., a terminology is provided. None the less, in light of the diverse handling of the problem by the figures in Professor McKeon's selections, one begins to doubt the very identity of the problem. There is the greatest variety in aspect. Sometimes the problem is one with metaphysics and theology, as in St. Augustine, Scotus Eriugena, St. Anselm, Roger Bacon, and St. Bonaventura. Here we see it in the earlier Augustinian tradition. Sometimes, again, there is a disassociation, and the subject can be treated independently of the others, even though metaphysical assumptions may be implicit, as in St. Thomas. Further, there is the alteration caused by the adoption of a new and more refined scientific terminology. This can be observed not only in such an Aristotelian as St. Thomas, but in such Augustinians as Matthew of Aquasparta and Duns Scotus as well. Here again, it would be difficult to discover that St. Augustine and Duns Scotus are talking about the same thing; in one instance the question is posed in terms of the eternal truth beyond all truths, and the impossibility of any teaching, while in the other there is question of the ground and validity of principles, and of the relation between experience and demonstration. What is the guarantee and evidence of the truth of a proposition. In truth, there is a richness of implication and development in the medievals, and especially in the later figures, rarely to be found in any contemporary philosopher. That this is caused in great part by the familiarity with and use made of a greater store of philosophic material is fairly obvious. Yet it should not be forgotten that these men are the masters and not the slaves of their content. A sign of this is to be observed in the freshness and originality with which the subject-matter is time and again approached.

The interest for the present-day reader, however, is not altogether historical and esthetic; often there is real relevance to contemporary logical and metaphysical discussions. William of Ockham, for example, will be found discussing the relations between propositions and existences, between propositions of science, again, and propositions concerning existences, their dependence upon one another and their relation to the knowing subject, much in the manner, and, one is tempted to remark, almost in the language, of W. E. Johnson. With this difference, that Ockham appears to be much more cognizant of the metaphysical implications and background of his doctrine than Johnson showed himself to be.

Because of the strangeness of terminology, especially in the later

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figures, and of the unfamiliarity of the reader with historical context, there might be danger of the material taking on many of the attributes of quaintness and archaeology, for all the actual relevance it would have to the philosophically inclined reader. This is avoided by Professor McKeon in his introductions and glossary. The special introductions each supply in part historical setting, in part philosophic elucidation and interpretation of the text. Those on St. Augustine and St. Bonaventura are especially worthy of note.

The general introduction to the first volume is concerned with some of the characteristics of medieval philosophy in general; with a brief description of scholastic method, and finally, with the problems confronting the translator in such a field. The general introduction to the second volume contains an able defense of medieval method and philosophy, a statement of their relevance to present problems, and a cogent critique of modern prepossessions for identifying some particular mode of approach and aspect with the whole of philosophy. General interpretation is often present, even in the particular introductions, but it is interpretation based upon an induction into the specific subject-matter, not dictated by some outside attitude. Whether or not the reader will always agree with Professor McKeon, at least he will have the material with which to form an opinion of his own.

The glossary is exceedingly valuable, in every case the distinctions and definitions are derived either from Aristotle or from some medieval. In a great many instances the definitions are Thomistic; in a later edition, perhaps, Professor McKeon will introduce variant interpretations drawn from the philosophies of opposing schools.

Both in the introduction to the first volume and in the introduction to the glossary, Professor McKeon has pointed out the difficulties which present themselves to the would-be translator. It may be said that he has surmounted them in admirable fashion. From the aspect of rhetoric alone, there are splendid passages in the selections from St. Augustine and Roger Bacon; but what is more important for the student, the diverse Latin styles of a St. Augustine or a St. Thomas are reproduced with a fidelity to the original which make it quite impossible to believe that they have been accomplished by the same hand.

Undoubtedly, the work, whatever may have been the author's intention, is more than a textbook or anthology. It would be a pity if its use should be limited to the beginner only; even those who are familiar with the field should find text and introduction mutually illuminating. For in its divergence from the set formulae and positivistic attitude fashionable to-day, this work marks a contribution of real significance to American philosophical understanding.

LINCOLN REIS.

TORONTO, CANADA.

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*Saint Jean de la Croix et le problème de l'expérience mystique.* JEAN BARUZI. 2d edition. Paris: Félix Alcan. 1931. Pp. 740.

This remarkable study impresses one at the start by its sheer bulk, and by its wealth of patiently elaborated detail. Its scholarship is characterized by what would ordinarily be called "German" persistence and thoroughness rather than by "French" lucidity and over-simplification. "What a stimulus it must be," one exclaims, "that could evoke such a response from a Frenchman! What strange fascination is it in Saint John of the Cross, which holds a philosophic mind thus entranced, and interests it in the most trifling details of his life and works?"

The answer to this question will not be found in the book. As the author admits (Preface, p. viii), nowhere in all the 740 pages does he pass from hypothesis to certainty sufficiently to give the reader *John of the Cross himself*. It would be well, before attempting to confront the difficulties of this massive piece of scholarship, to go to some other source for a simple portrait of the great Spanish mystic and poet who lies concealed behind this mass of detail. All readers who do not take this precaution should be warned off, as John of the Cross warned all but Carmelites from attempting the "Ascent of Mt. Carmel" with him, or plunging with him into "The Dark Night of the Soul." Rough and steep is the way: first a critical evaluation of the extant texts; then a careful and elaborate piecing together of the scraps of biographical information which enable us to reconstruct a hypothetical portrait of the saint's personality and life; then a painstaking philological examination of the imagery and favorite turns of speech employed in the poetical works, with a view to relating St. John's philosophy of mysticism and his actual mystical experience; then finally (almost half the book), a closely commentated description of the "Mystic Way" as set forth by St. John, from the "initial negation" to the final "theopathic state." In all this wealth of detail, it is very easy not to see the wood for the trees.

Yet the patient reader will find, implied or reflected rather than present in these pages, a figure of peculiar attractiveness, compelling one to revise and enlarge the common definitions of the word "mystic," and reconsider the usual facile explanations of the psychology and epistemology of mysticism. A child of the same Catholic Reformation which produced the "Spiritual Exercises" of St. Ignatius Loyola and the mystical works of St. Theresa (with whom he was closely associated), St. John of the Cross represents a sterner, more metaphysical type of mysticism than will be found in any of the other Spanish mystics. He had a distrust of all subjective self-manipulations and a thirst for objective reality which made

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him skeptical of discovering the Divine either in the auto-suggestive vividness of imagery cultivated by St. Ignatius, or in the supernatural visions and delicious swoonings and transverberations so eagerly described by St. Theresa. For St. John, nothing would satisfy save that Absolute One, abiding behind and beyond the changing and the temporal, which has been the goal of the philosophical mystics in India ever since the time of the Upanishads, and the goal of a select few in the West ever since Neo-Platonism introduced a strain of Hinduism into Christian thought. To this supreme good all lesser goods are ruthlessly sacrificed, passing one after another into Nothingness and Night, until only God and the Soul, made perfectly one, remain.

There is always a paradox in Christian mysticism, as contrasted with Hindu mysticism. If acosmic pantheism be adopted as the metaphysical background of mystic experience, then there is nothing to restrain the mystic from pushing to the limit his endeavor to escape from the illusions of sense and the entanglements of earthly affections. If the whole visible universe is a "fleeting show," and my fellow-men are but bubbles, like myself, momentarily appearing and disappearing upon the stream of the One Divine Reality, then there is no reason why I should not escape from the sad dream of life as quickly as possible, and go home forever to Nirvana. For the Christian mystic, however, there is no such easy escape from life's responsibilities. The God with whom he seeks to be united is not the inhabitant of some vast pool of peace, far from the madding crowd and the noises of earth; He is one who, according to the Christian story, made the world and loves it, in spite of human sin; yes, even descends into it, in Christ, in sacrificial concern for the welfare of the least of mortals. World-flight, accordingly, is never the last word with the genuinely Christian mystic—and John of the Cross is of that number. In the "theopathic state," all that concern for the world which was renounced in the initial negative stages of the mystic way, comes back in the shape of a calm, divine compassion and active good-will for the whole world. As Baruzi concludes (pp. 684–685):

> John of the Cross is of the first rank among those mystics who, in the last resort, have accepted the universe. It is not enough to say that he sang (and analyzed) the meeting of God and the Soul, alone with each other. Those very *things* which are at first rejected in the negative stage of the "Dark Night," are reabsorbed in the Soul, discovered in God, and passionately loved in their new-found grandeur. . . . But this God in whom John of the Cross rediscovers the world, is reached by going beyond things and beyond images, to an inner center where He dwells.

Is it too much to claim, with Baruzi, that an experience of such sincerity, depth, and objectivity has real "noëtic" significance, en-

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titling it to the respectful attention of metaphysicians? I think not. But if this claim be denied, one may at least quote, without translation, the closing words of the book:

> Mais sans doute n'est-il pas interdit de transposer, à travers le rhythme de l'effort métaphysique, l'amère purification de l'esprit.

WALTER M. HORTON.

OBERLIN COLLEGE.

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## JOURNALS AND NEW BOOKS

THE PHILOSOPHICAL REVIEW. Vol. XLI, 3. The Contemporary Significance of Hegel's Philosophy: *Sidney Hook.* Hegel's Political Philosophy: *G. H. Sabine.* Hegel's Rationalism: *M. R. Cohen.* Discussion—Idealistic Logic and Philosophical Construction: *R. C. Lodge.*

THE MONIST. Vol. XLII, 2. Probability and Causality in Quantum Physics: *Henry Margenau.* Logic and Scientific Law: *P. A. Carmichael.* Explanation, Science and Forms: *F. P. Boswell.* Fact and Event: *A. Ushenko.* The Unit of Life: *W. C. George.* The Square of Opposition: *E. J. Nelson.* On the Construction of a Logic in which Inclusion has the Meaning of the Species-Genus Relation: *H. B. Smith.* On the Relation of the Aristotelean Algebra to That of Boole-Schroeder: *H. B. Smith.* On the Derivation of Aristotelean Algebra from the Properties of a Hamiltonian Set: *H. B. Smith.* Discussions—Our Knowledge of Physical Objects: *Rasvihary Das.* Professor Lewis' View of our Knowledge of Objects: *O. N. Hillman.* $\phi a$, $\phi x$, $\phi \hat{x}$: *Paul Gastwirth.* In Reply to Mr. John B. Kent: *S. Z. Hasan.* Note on the Inconsistency of Aristotelean Logic: *A. Ushenko.*

RIVISTA DI FILOSOFIA. Anno XXIII, 2. La nostra inquietudine: *E. Morselli.* Il problema del rapporto fra le anime individuali e l'anima divina dell'universo nella filosofia di Plotino: *G. Capone Braga.* Sul valore della distinzione fra legge e norma: *C. Goretti.* Il problema filosofico del ritorno al pensiero antico: *E. Grassi.*

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Jerusalem, Wilhelm: An Introduction to Philosophy. Authorized translation (from 10th edition, revised and enlarged) by Charles F. Sanders. Revised edition. New York: Macmillan Co. 1932. xvii + 526 pp. $2.50.

Warrain, Francis: L'Oeuvre Psychobiophysique de Charles Henry. Paris: Librairie Gallimard. 1931. 551 pp.

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## NOTES AND NEWS

We regret to announce that Professor Ralph Monroe Eaton of Harvard University died on April 13, 1932. He had been Assistant Professor of Philosophy and Tutor at Harvard since 1926, and was the author of *Symbolism and Truth* (1925) and *General Logic* (1931). He was also editor of *Selections from Descartes* in the Modern Students Library (1927) and translated and wrote a preface for *Secret Ways of the Mind* by W. M. Kranefeldt, with an Introduction by C. C. Jung (1932).

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C. Cornelius Benjamin of the University of Illinois will go to the University of Chicago at the beginning of the next academic year as Assistant Professor of Philosophy.

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Professor E. G. Spaulding, President of the Eastern Division of the American Philosophical Association, has appointed the following Committee to coöperate with the Eighth International Congress which meets in Prague in 1934: Professor A. C. Armstrong, Honorary Secretary, Professor J. J. Coss, Secretary *pro tem.*, and Professors G. P. Adams, E. B. McGilvary, W. P. Montague, R. B. Perry, George Rebec, and W. M. Urban.

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Report of the Thirty-first Annual Meeting of the Eastern Division of the American Philosophical Association. RUDOLPH KAGEY.
Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 5. March 3, 1932.**

Report of the Eighth Annual Meeting of the Pacific Division of the American Philosophical Association. DONALD CARY WILLIAMS.
On the Logical Positivism of the Viennese Circle. EDWARD B. GINSBURG.
Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 6. March 17, 1932.**

Uniformity and Induction. D. W. GOTSHALK.
Fichte's Conception of a League of Nations. A. C. ARMSTRONG.
Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 7. March 31, 1932.**

Mr. Lewis and the *A Priori:* ARTHUR E. MURPHY.
The Metaphysics of Space and Time. V. F. LENZEN.
Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 8. April 14, 1932.**

Some Metaphysical Implications of the Pragmatic Theory of Knowledge. THEODORE T. LAFFERTY.
Some Early Holistic Psychologists. W. D. COMMINS.
Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 9. April 28, 1932.**

On Persuasion. RAPHAEL DEMOS.
Logic and Superstition. J. R. KANTOR.
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# THE JOURNAL OF PHILOSOPHY

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VOL. XXIX, No. 11. MAY 26, 1932.

THE JOURNAL OF PHILOSOPHY

# THE PRESTIGE OF THE INFINITE

"THE more complex the world becomes and the more it rises above the indeterminate, so much the farther removed it is from God; that is to say, so much the more impious it is." M. Julien Benda [1] is not led to this startling utterance by any political or sentimental grudge. It is not the late war, nor the peace of Versailles, nor the parlous state of the arts, nor the decay of morality and prosperity that disgusts him with our confused world. It is simply overmastering respect for the infinite. *La Trahison des Clercs,* or Treason of the Levites, with which he had previously upbraided the intellectuals of his time, now appears to consist precisely in coveting a part in this world's inheritance, and forgetting that the inheritance of the Levites is the Lord: which, being interpreted philosophically, means that a philosopher is bound to measure all things by the infinite.

This infinite is not rhetorical, as if we spoke of infinite thought or infinite love: it is physico-mathematical. Nothing but number, M. Benda tells us, seems to him intelligible. Time, space, volume, and complexity (which appears to the senses as quality) stretch in a series of units, positions, or degrees, to infinity, as number does: and in such homogeneous series, infinite in both directions, there will be no fixed point of origin for counting or surveying the whole and no particular predominant scale. Every position will be essentially identical with every other; every suggested structure will be collapsible and reversible; and the position and relations of every unit will be indistinguishable from those of every other. In the infinite, M. Benda says, the parts have no identity: each number in the scale, as we begin counting from different points of origin, bears also every other number.

This is no mere mathematical puzzle; the thought has a strange moral eloquence. Seen in their infinite setting, which we may presume to be their ultimate environment, all things lose their central position and their dominant emphasis. The contrary of what we first think of them or of ourselves—for instance that we are alive, while they are dead or unborn—is also true. Egotism becomes absurd; pride and shame become the vainest of illusions. If then it

[1] *Essai d'un Discours cohérent sur les Rapports de Dieu et du Monde.* Par Julien Benda. Librairie Gallimard, Paris, 1931.



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be repugnant to reason that the series of numbers, moments, positions, and volumes should be limited—and the human spirit has a great affinity to the infinite—all specific quality and variety in things must be superficial and deeply unreal. They are masks in the carnival of phenomena, to be observed without conviction, and secretly dismissed as ironical by those who have laid up their treasure in the infinite.

This mathematical dissolution of particulars is reinforced by moral considerations which are more familiar. Existence—any specific fact asserting itself in any particular place or moment—is inevitably contingent, arbitrary, gratuitous, and insecure. A sense of insecurity is likely to be the first wedge by which repentance penetrates into the animal heart. If a man did not foresee death and fear it, he might never come at all to the unnatural thought of renouncing life. In fact, he does not often remember death: yet his whole gay world is secretly afraid of being found out, of being foiled in the systematic bluff by which it lives as if its life were immortal; and far more than the brave young man fears death in his own person, the whole life of the world fears to be exorcised by self-knowledge, and lost in air. And with good reason: because, whether we stop to notice this circumstance or not, every fact, every laborious beloved achievement of man or of nature, has come to exist against infinite odds. In the dark grab-bag of Being, this chosen fact was surrounded by innumerable possible variations or contradictions of it; and each of those possibilities, happening not to be realized here and now, yet possesses intrinsically exactly the same aptitude or claim to existence. Nor are these claims and aptitudes merely imaginary and practically contemptible. The flux of existence is continually repenting of its choices, and giving everything actual the lie, by continually substituting something else, no less specific and no less nugatory. *This* world, *any* world, exists only by an unmerited privilege. Its glory is offensive to the spirit, like the self-sufficiency of some obstreperous nobody, who happens to have drawn the big prize in a lottery. "The world," M. Benda writes, "inspires me with a double sentiment. I feel it to be full of grandeur, because it has succeeded in asserting itself and coming to exist; and I feel it to be pitiful, when I consider how it hung on a mere nothing that this particular world should never have existed." And though this so accidental world, by its manifold beauties and excitements, may arouse our romantic enthusiasm, it is fundamentally an *unholy* world. Its creation, he adds in italics, "*is something which reason would wish had never taken place.*"

For we must not suppose that God, when God is defined as infinite Being, can be the creator of the world. Such a notion would

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hopelessly destroy that coherence in thought to which M. Benda aspires. The infinite can not be selective; it can not possess a particular structure (such, for instance, as the Trinity) nor a particular quality (such as goodness). It can not exert power or give direction. Nothing can be responsible for the world except the world itself. It has created, or is creating, itself perpetually by its own arbitrary act, by a groundless self-assertion which may be called (somewhat metaphorically) will, or even original sin: the original sin of existence, particularity, selfishness, or separation from God. Existence, being absolutely contingent and ungrounded, is perfectly free: and if it ties itself up in its own habits or laws, and becomes a terrible nightmare to itself by its automatic monotony, that still is only its own work and, figuratively speaking, its own fault. Nothing save its own arbitrary and needless pressure keeps it going in that round. This fatality is impressive, and popular religion has symbolized it in the person of a deity far more often recognized and worshipped than infinite Being. This popular deity, a symbol for the forces of nature and history, the patron of human welfare and morality, M. Benda calls the imperial God. "It is clear that these two Gods . . . have nothing to do with one another. The God whom Marshall de Villars, rising in his stirrups and pointing his drawn sworn heavenwards, thanks on the evening of Denain, is one God: quite another is the God within whose bosom the author of the *Imitation*, in a corner of his cell, feels the nothingness of all human victories."

It follows from this, if we are coherent, that any "return to God" which ascetic philosophy may bring about can not be a social reform, a transition to some better form of natural existence in a promised land, a renovated earth, or a material or temporal heaven. Nor can the error of creation be corrected violently by a second arbitrary act, such as suicide, or the annihilation of the universe by some ultimate general collapse. If such events happen, they still leave the door open to new creations and fresh errors. But the marvel is (I will return to this point presently) that the world, in the person of a human individual endowed with reason, may perceive the error of its ways and correct it ideally, in the sphere of estimation and worship. Such is the only possible salvation. Reason, in order to save us, and we, in order to be saved, must both subsist: we must both be incidents in the existing world. We may then, by the operation of reason in us, recover our allegiance to the infinite, for we are bone of its bone and flesh of its flesh: and by our secret sympathy with it we may rescind every particular claim and dismiss silently every particular form of being, as something unreal and unholy.

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An even more cogent reason why M. Benda's God can not have been the creator of the world is that avowedly this God has never existed. We are expressly warned that "if God is infinite Being he excludes existence, in so far as to exist means to be distinct. In the sense which everybody attaches to the word existence, God, as I conceive him, *does not exist.*" Of course, in the mind of a lover of the infinite, this fact is not derogatory to God, but derogatory to existence. The infinite remains the first and the ultimate term in thought, the fundamental dimension common to all things, however otherwise they may be qualified; it remains the eternal background against which they all are defined and into which they soon disappear. Evidently, in this divine—because indestructible and necessary—dimension, Being is incapable of making choices, adopting paths of evolution, or exercising power: it knows nothing of phenomena; it is not their cause nor their sanction. It is incapable of love, wrath, or any other passion. "I will add," writes M. Benda, "something else which theories of an impersonal deity have less often pointed out. Since infinity is incompatible with personal being, God is incapable of morality." Thus mere intuition and analysis of the infinite, since this infinite is itself passive and indifferent, may prove a subtle antidote to passion, to folly, and even to life.

## II

I think M. Benda succeeds admirably in the purpose announced in his title of rendering his discourse coherent. If once we accept his definitions, his corollaries follow. Clearly and bravely he disengages his idea of infinity from other properties usually assigned to the deity, such as power, omniscience, goodness, and tutelary functions in respect to life, or to some special human society. But coherence is not completeness, nor even a reasonable measure of descriptive truth; and certain considerations are omitted from M. Benda's view which are of such moment that, if they were included, they might transform the whole issuse. Perhaps the chief of these omissions is that of an organ for thought. M. Benda throughout is engaged simply in clarifying his own ideas, and repeatedly disclaims any ulterior pretensions. He finds in the panorama of his thoughts an idea of infinite Being, or God, and proceeds to study the relation of that conception to all others. It is a task of critical analysis and religious confession: and nothing could be more legitimate and, to some of us, more interesting. But whence these various ideas, and whence the spell which the idea of infinite Being in particular casts over the meditative mind? Unless we can view these movements of thought in their natural setting and order of genesis, we shall be in danger of turning autobiography into cosmology and inwardness into folly.

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One of the most notable points in M. Benda's analysis is his insistence on the leap involved in passing from infinite Being to any particular fact or system of facts; and again the leap involved in passing, when the converted spirit "returns to God," from specific animal interests—no matter how generous, social, or altruistic these interests may be—to absolute renunciation and sympathy with the absolute. "That a will to return to God should arise in the phenomenal world seems to be a miracle no less wonderful (though it be less wondered at) than that the world should arise in the bosom of God." "Love of man, charity, humanitarianism are nothing but the selfishness of the race, by which each animal species assures its specific existence." "To surrender one's individuality for the benefit of a larger self is something quite different from disinterestedness; it is the exact opposite." And certainly, if we regarded infinite Being as a cosmological medium—say, empty space and time—there would be a miraculous break, an unaccountable new beginning, if that glassy expanse was suddenly wrinkled by something called energy. But in fact there need never have been such a leap, or such a miracle, because there could never have been such a transition. Infinite Being is not a material vacuum "in the bosom" of which a world might arise. It is a Platonic idea—though Plato never entertained it—an essence, non-existent and immutable, not in the same field of reality at all as a world of moving and colliding things. Such an essence is not conceivably the seat of the variations that enliven the world. It is only in thought that we may pass from infinite Being to an existing universe; and when we turn from one to the other, and say that now energy has emerged from the bosom of God, we are turning over a new leaf, or rather picking up an entirely different volume. The natural world is composed of objects and events which theory may regard as transformations of a hypothetical energy; an energy which M. Benda—who when he comes down to the physical world is a good materialist—conceives to have condensed and distributed itself into matter, which in turn composed organisms and ultimately generated consciousness and reason. But in whatever manner the natural world may have evolved, it is found and posited by us in perception and action, not, like infinite Being, defined in thought. This contrast is ontological, and excludes any derivation of the one object from the other. M. Benda himself tells us so; and we may wonder why he introduced infinite Being at all into his description of the world. The reason doubtless is that he was not engaged in describing the world, except by the way, but rather in classifying and clarifying his ideas in view of determining his moral allegiance. And he arranged his terms, whether ideal or material, in a single series, because they were alike present to his intuition,

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and he was concerned to arrange them in a hierarchy, according to their moral dignity.

Not only is infinite Being an incongruous and obstructive term to describe the substance of the world (which, if it subtends the changes in the world and causes them, must evidently change with them), but even mathematical space and time, in their ideal infinity, may be very far from describing truly the medium and groundwork of the universe. That is a question for investigation and hypothesis, not for intuition. But in the life of intuition, when that life takes a mathematical turn, empty space and time and their definable structure may be important themes; while, when the same life becomes a discipline of the affections, we see by this latest example, as well as by many a renowned predecessor of M. Benda, that infinite Being may dominate the scene.

Nor is this eventual dominance so foreign to the natural mind, or such a miraculous conversion, as it might seem. Here, too, there is no derivation of object from object, but an alternative for the mind. As M. Benda points out, natural interests and sympathies may expand indefinitely, so as to embrace a family, a nation, or the whole animate universe; we might even be chiefly occupied with liberal pursuits, such as science or music; the more we labored at these things and delighted in them, the less ready should we be for renunciation and detachment. Must conversion then descend upon us from heaven like a thunderbolt? Far from it. We need not look for the principle of spiritual life in the distance: we have it at home from the beginning. Even the idea of infinite Being, though unnamed, is probably familiar. Perhaps in the biography of the human race, or of each budding mind, the infinite or indeterminate may have been the primary datum. On that homogeneous sensuous background, blank at first but secretly plastic, a spot here and a movement there may gradually have become discernible, until the whole picture of nature and history had shaped itself as we see it. A certain sense of that primitive datum, the infinite or indeterminate, may always remain as it were the outstretched canvas on which every picture is painted. And when the pictures vanish, as in deep sleep, the ancient simplicity and quietness may be actually recovered, in a conscious union with Brahma. So sensuous, so intimate, so unsophisticated the "return to God" may be for the spirit, without excluding the other avenues, intellectual and ascetic, by which this return may be effected in waking life, though then not so much in act as in intent only and allegiance.

I confess that formerly I had some difficulty in sharing the supreme respect for infinite Being which animates so many saints: it seemed to me the dazed, the empty, the deluded side of spirituality.

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Why rest in an object which can be redeemed from blank negation only by a blank intensity? But time has taught me not to despise any form of vital imagination, any discipline which may achieve perfection after any kind. Intuition is a broadly based activity; it engages elaborate organs and sums up and synthesizes accumulated impressions. It may therefore easily pour the riches of its ancestry into the image or the sentiment which it evokes, poor as this sentiment or image might seem if expressed in words. In rapt or ecstatic moments, the vital momentum, often the moral escape, is everything, and the achievement, apart from that blessed relief, little or nothing. Infinite Being may profit in this way by offering a contrast to infinite annoyance. Moreover, in my own way, I have discerned in pure Being the involution of all forms. As felt, pure Being may be indeterminate, but as conceived reflectively it includes all determinations: so that when deployed into the realm of essence, infinite or indeterminate Being truly contains entertainment for all eternity.

M. Benda feels this pregnancy of the infinite on the mathematical side; but he hardly notices the fact, proclaimed so gloriously by Spinoza, that the infinity of extension is only one of an infinity of infinites. There is an esthetic infinite, or many esthetic infinites, composed of all the forms which nature or imagination might exhibit; and where imagination fails, there are infinite remainders of the unimagined. The version which M. Benda gives us of infinite Being, limited to the mathematical dimension, is therefore unnecessarily cold and stark. His one infinity is monochrome, whereas the total infinity of essence, in which an infinity of outlines is only one item, is infinitely many-colored. Phenomena therefore fall, in their essential variety, within and not without infinite Being: so that in "returning to God" we might take the whole world with us, not indeed in its blind movement and piecemeal illumination, as events occur, but in an after-image and panoramic portrait, as events are gathered together in the realm of truth.

On the whole I think M. Benda's two Gods are less unfriendly to one another than his aggrieved tone might suggest. This pregnant little book ends on a tragic note. "Hitherto human self-assertion in the state or the family, while serving the imperial God, has paid some grudging honors, at least verbally, to the infinite God as well, under the guise of liberalism, love of mankind, or the negation of classes. But to-day this imperfect homage is retracted, and nothing is reverenced except that which gives strength. If anyone preaches human kindness, it is in order to establish a 'strong' community martially trained, like a super-state, to oppose everything not included within it, and to become omnipotent in the art of utilizing

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the non-human forces of nature. . . . The will to return to God may prove to have been, in the history of the phenomenal world, a sublime accident."

Certainly the will to "return to God," if not an accident, is an incident in the life of the world; and the whole world itself is a sublime accident, in the sense that its existence is contingent, groundless, and precarious. Yet so long as the imperial God continues successfully to keep our world going, it will be no accident, but a natural necessity, that many a mind should turn to the thought of the infinite with awe, with a sense of liberation, and even with joy. The infinite God owes all his worshippers, little as he may care for them, to the success of the imperial God in creating reflective and speculative minds. Or (to drop these mythological expressions which may become tiresome) philosophers owe to nature and to the discipline of moral life their capacity to look beyond nature and beyond morality. And while they may *look* beyond, and take comfort in the vision, they can not *get* beyond. As M. Benda says, the most faithful Levite can return to the infinite only in his thought; in his life he must remain a lay creature. Yet nature, in forming the human soul, unintentionally unlocked for the mind the doors to truth and to essence, partly by obliging the soul to attend to things which are outside, and partly by endowing the soul with far greater potentialities of sensation and invention than daily life is likely to call forth. Our minds are therefore naturally dissatisfied with their lot and speculatively directed upon an outspread universe in which our persons count for almost nothing. These insights are calculated to give our brutal wills some pause. Intuition of the infinite and recourse to the infinite for religious inspiration follow of themselves, and can never be suppressed altogether, so long as life is conscious and experience provokes reflection. Spirit is certainly not one of the forces producing spirit, but neither is it a contrary force. It is the actuality of feeling, of observation, of meaning. Spirit has no unmannerly quarrel with its parents, its hosts, or even its gaolers: they know not what they do. Yet spirit belongs intrinsically to another sphere, and can not help wondering at the world, and suffering in it. The man in whom spirit is awake will continue to live and act, but with a difference. In so far as he has become pure spirit he will have transcended the fear of death or defeat; for now his instinctive fear, which will subsist, will be neutralized by an equally sincere consent to die and to fail. He will live henceforth in a truer and more serene sympathy with nature than is possible to rival natural beings. Natural beings are perpetually struggling to live only, and not to die; so that their will is in hopeless rebellion against the divine decrees which they must obey notwithstanding. The spiritual man,

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on the contrary, in so far as he has already passed intellectually into the eternal world, no longer endures unwillingly the continual death involved in living, or the final death involved in having been born. He renounces everything religiously in the very act of attaining it, resigning existence itself as gladly as he accepts it, or even more gladly; because the emphasis which action and passion lend to the passing moment seems to him arbitrary and violent; and as each task or experience is dismissed in turn, he accounts the end of it more blessed than the beginning.

GEORGE SANTAYANA.

ROME, ITALY.

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## REPORT OF THE THIRTY-THIRD ANNUAL MEETING OF THE WESTERN DIVISION OF THE AMERICAN PHILOSOPHICAL ASSOCIATION

IN many respects the Thirty-third Annual Meeting of the Western Division of the American Philosophical Association at Ann Arbor, March 24–26, 1932, was just another meeting. There was the same buffeting about of the *onus probandi*, the same avoidance or argument by resort to definition, the same few moments of real insight, the same assortment of good and bad papers, and the same interesting chats upon questions of academic and philosophic import. But in many respects the meeting was different. A critical observer searching for under-currents and tendencies in American philosophic thought might have found revealed in the papers and discussions as a whole a certain amount of evidence for an interesting thesis. It might be stated as follows: Philosophic thought, presumably under the influence of the depression, is turning away from metaphysics and all of the abstract and speculative notions that go along with it, and is becoming more and more concerned with the concrete and practical concepts pertaining to the social order. Having stated his thesis our observer might present his evidence as follows: (1) The number of papers upon metaphysical topics was much less than in former years. (2) In connection with those papers which were metaphysical the discussion centered about problems of method rather than of subject-matter. (3) The presidential address argued for the complete exclusion from philosophy of all metaphysics except that which can be included in the study of the theory of value. (4) The trend of the discussion impressed Professor Tapper as being so definitely anti-metaphysical that he was compelled to suggest before reading his paper at the conclusion of the last session an alternative title, viz. "Does Metaphysics Have a Chance?" (5) The papers on ethics drew forth the most ani-

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mated discussion, thus indicating a general interest in and concern for problems of this kind.

But an equally critical observer might legitimately insist that the evidence had not been fairly read. While it is true, he would point out, that philosophic thought seems to be turning away from metaphysics, it is turning toward logical theory, and is thus forsaking the abstractions of metaphysics only to take up the even more tenuous abstractions of logical form. Our second observer's evidence would be as follows: (1) While there were fewer papers on metaphysics there were more on logic and epistemology. (2) In connection with those papers on logic the primary concern was with questions of theory rather than with questions of methodology. (3) The subject of the presidential address was the *theory* of value and thus could not be taken as an indication of a trend toward the concrete. (4) The papers on ethics which provoked so much discussion were devoted to questions of social theory and of method in the social sciences, without the slightest suggestion that the philosopher had anything to do with rescuing society from an unfortunate predicament. The net result would seem to be that if the depression is having any effect upon philosophy it is at least not the effect one would expect it to have. Perhaps a saner conclusion would be that it is obviously absurd to expect a meeting of this kind, which is clearly local and non-representative, to reveal anything with regard to the deeper tendencies in philosophic thought.

The papers of the first session were devoted largely to critico-historical problems. Dr. Maurice Baum showed in a convincing manner that James was a pragmatist before his *Psychology* was written; in fact prior to 1878 he had adopted his pragmatic position both as a method and as a theory of truth. Peirce's article, supposed to be the first statement of the pragmatic position, was published in this year. But the method which James called the "subjective method" was clearly evident in his own writings as early as 1868. Thus James deserves more credit for this point of view than is commonly given to him. Dr. George Gentry's paper was quite different in subject-matter and method. He examined Broad's arguments for the sensum theory and found the position both logically untenable and intrinsically unplausible. The evidence produced by Broad, he maintained, is incompatible with his analysis; in fact it would seem to lead to a contradictory conclusion. Furthermore Broad fails to show in any satisfactory manner how physical objects could manifest themselves by sense objects. Thus the position is formally and materially inadequate. In the discussion which followed, Dr. Castell took exception to the speaker's statement that belief in a proposition gives to that proposition no initial truth-

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probability. Unfortunately what promised to be an interesting argument died a premature death because each avoided the issue by insisting that the burden of the proof lay with the opposition. Dr. Eleanor Bisbee, in a keen and interesting analysis, showed a close analogy between the essential problem of Plato's *Parmenides* and the modern conception of a propositional function. Practically everything which Plato says about the One and the Many, Miss Bisbee pointed out, can also be said about the propositional function and its values; in fact the relation between value and variable is precisely the relationship which Plato was trying to describe. The One and the Many inevitably appear and disappear and reappear in relation to one another much as the binomial theorem disappears into and can again be made to reappear from the specific propositions which result from substituting values for $x$ and $y$. Professor J. H. Farley's paper, entitled "The Sources of Bradley's Antinomies of the Good," showed that the Bradleyan point of view involves the attempt to describe the world as a union of opposites. The contradictory nature of the opposites is due to a failure to see in the local fact the fundamental rational principle through which all contradiction is transcended. With regard to the ethical situation the antinomies of the good are various dilemmas that arise from conceiving the good, elements thereof, or situations in general, in terms of mechanical identity rather than in terms of an immanent rational principle.

The Friday morning session began with a paper by Professor W. S. Gammertsfelder on "Current Skepticism of Metaphysics." The skeptical attitude toward metaphysics is due, he asserted, to one or more of four reasons: (1) a feeling of disillusionment due to past failures to develop a satisfactory metaphysical system; (2) the conflicting interpretations of scientific principles and methods, which make it absurd to talk about ultimates; (3) the point of view of the Viennese school that philosophy is merely the clarification of propositions, and metaphysics is therefore nonsense; and (4) the failure of social theories to bring about social stability. He showed that each of these reasons is an illegitimate basis for a skeptical attitude. (1) There is something permanent in all metaphysical systems, which is presumably the truth in them. (2) There is only a limited number of possible interpretations of science, and this itself is a metaphysical fact. (3) The point of view of logical positivism involves a limited view of logic and is based on the neglect of the inductive side of thought. (4) Social chaos is inevitable in a period of transition and hence is not due to a failure of social theory. Professor Marvin Farber argued for a relational logic as the most adequate conceptual instrument for interpreting reality. The value

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of this instrument lies both in its power to portray the unity of the physical world and in its unlimited range of relational variations. This necessitates a logical pluralism which considers patterns of unity in relationship to experience and existing systems of knowledge. The discussion following this paper was, as is often the case, quite irrelevant. It involved attributing to the author a meaning of the word "physical" which was not only foreign to his point of view, but quite without bearing upon the subject of his paper. The final paper of the morning, which was without doubt one of the clearest and most interesting of the session, was by Professor McGilvary and was presented under a revised title, "Physics and Metaphysics." The physicist has to do with two kinds of object. On the one hand there is the experienced object which is the starting-point of his investigation; on the other there is the physical quantity proper which is a number either representing the direct measured value of the experienced object or some other less direct mathematical property. Now such physical quantities are entities of an entirely different kind as compared with the experienced objects, and the physicist should realize the difference. If he does not he is certain to hypostatize the physical quantities and make them into things existing along with and interacting with the experienced objects. This is bad metaphysics. Thus to speak of space-time as something which exists in the same sense that experienced space and experienced time exist is to talk metaphysical nonsense, and when Eddington talks of electrons hitting a piece of paper he is guilty of this same confusion. There is a genuine problem in the determination of the relation between the physical quantity and the experienced object, but this problem is metaphysical rather than physical.

It is doubtful whether the division of the Friday afternoon session into parallel sections was a success. The topics were of a related nature, and many members desiring to hear papers from both sections were compelled either to forego one paper of their choice or else to dash from one section to the other.

The section devoted to induction opened with a paper by Dr. Herbert Feigl, entitled "The Logical Character of the Principle of Induction." He showed in a clear-cut and convincing manner that the widely recognized formulations of induction do not express the most fundamental rule of induction. The principle of induction can be proved only by a *petitio*. As a result the current view concerning the probability of induction must be revised in terms of a frequency theory. The ultimate result with regard to the status of generalized knowledge must be the Humian position, though without the skeptical aspect. The principle of induction, instead of being

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a premise guaranteeing the validity of knowledge, is to be regarded as a regulative maxim or rule whose justification is pragmatic. The point of view presented in this paper was in essential agreement with my own paper on "The Mystery of Scientific Induction." I tried to suggest that the imaginative act of scientific discovery is not the inscrutable mystery which it is commonly supposed to be, but rather an act capable of being formalized, i.e., an operation guided by a rule which permits us to say that the explanatory notion is derived from the data in a manner partaking of the same definiteness as the manner in which a conclusion is derived from premises through deductive reasoning. The principle of induction would be precisely such a rule. Mr. Merritt H. Moore deserves credit for calling attention of the members of the association to the writings of Cournot. Mr. Moore analyzed the notions of order and probability as they are found in this man's view. Order is not subjective, but objective. This must be so because it would be impossible to obtain a subjective notion of order from a milieu of disorder. The unity and simplicity which are the criteria of this order are discerned through an esthetic attraction. There are two sorts of probability: mathematical where the number of chances for a specific event is exactly determinable; and philosophical probability where exact determination of chances is impossible. The final paper of the session by Professor Karl Schmidt took exception to the usual procedure in the logic of science which starts with a gulf between theory and fact and then tries to bridge this gulf. This approach fails to recognize that all fact involves theory and all theory involves fact. Theory and fact realize each other; they are parts of a system. So far as facts are determinate they are determined by laws, and laws must always be illustrated in facts.

The parallel section was devoted to problems of epistemology and opened with a paper by Professor M. T. McClure on "The Psychology of Heraclitus." Heraclitus, he pointed out, is typical of the general point of view of Ionian science which reveals the unity of man and nature. His psychology is inseparably bound up with his cosmology; the transformations of substance from one elemental form into another occur in the inner life as well as in the processes of nature. It is in terms of these transformations that the fragments bearing on psychology are to be interpreted. For example, it is at that point in the "Way Down" where fire is transformed into moisture that the distinction between reason and sentiency arises. Heraclitus considers that the elementary facts of perception and cognition are understood when they are placed in an intelligible connection with the antecedent conditions with which they are continuous. Professor G. P. Conger explained the relation

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between epitomization and epistemology. According to the former, the universe comprises at least six realms—logic, number, geometry, kinematics, matter, life, and mind—in transitive relationships of inclusion, or container-contained, and with important resemblances in the details of their structures and processes. Mind, the inmost and most highly coördinating, receives data from the outmost realms only as "refracted" through those which intervene. For the problem of error the proper dichotomy is not that between my mind and the world, but between my experience of the world at one moment and my (or your) experience of the world at another moment. Professor Charles Hartshorne appealed for a greater use by philosophers of the conclusions of laboratory psychology, particularly those which are concerned with the psycho-physics of sensation. The generalization which may be made upon the basis of these conclusions is that sense-data are continuous in nature with the mind which is aware of them, and that an essential element of the common character uniting them is that of feeling. Secondary qualities are just as "psychic" as tertiary, nor are any such qualities strictly simple and unanalyzable. The analyzable character of these elements make them comparable in principle to the character of the neural processes, and thus makes an intelligible causal explanation possible. Professor J. A. Melrose, in a paper entitled "The Genetic Approach to the Ego-centric Problem," attempted to show that the problem has been met traditionally by dogmatic assertion or by unwarranted assumption, without any real grappling with the problem itself. The solution must depend upon achieving a relevant objectivity with respect to it, and so enable us to avoid the vicious circle of merely examining consciousness by means of itself. Professor Melrose felt that this objectivity could be achieved by considering consciousness in its lower stages as an organic learning process. Such a study would presumably uncover relations between lower learning and the structure of conscious patterns that emerge from it, which would aid in allocating within knowledge those effects which come from the structure of mind and those which come from the structure of nature beyond mind.

For many who have followed the contributions of Professor A. P. Brogan to the programs of the association, and who have perhaps been somewhat puzzled by his attitude toward philosophy, the presidential address offered an explanation. Among the variety of views as to the nature and status of philosophy, Professor Brogan asserted, there is only one which seems adequate. It is the conception of philosophy as the study of the general theory of value. Defined in this way philosophy will include logic, for logic is a study of belief and belief is something which may be criticized. It will also include

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ethics, esthetics, religion, economics, law, history, and education. It will ask specifically whether there is a general theory of value at the basis of all of these, and whether there are special theories of value peculiar to some. But this exhausts the meaning of philosophy and all other definitions of philosophy are incorrect. To define philosophy as the study of reality involves one in discussions which are dangerous because they assume a questionable use of the categories of dependence and independence. These concepts have a legitimate application in only two fields: (*a*) in the universe of a postulate system where they may be reduced to contradiction and non-contradiction, and (*b*) in the universe of statistics where they are reducible to types of correlations. The views that philosophy is merely logic, that it is nothing but tautologies, that it is a way of life, were in turn examined by Professor Brogan and all were rejected. The method of the philosophy of value is still in the formative stage. The significant concepts in such a study are those of creation, discovery, subject, and object. But the methods of investigation must be those of deductive logic and of statistics, except where the particular formulation of the problem demands a special method.

The papers read at the Saturday morning section were all concerned with problems of ethics. Professor T. V. Smith began with the suggestion of a new category for the understanding of the nature of the moral factor. He called this the category of doing-suffering, which he formulated as follows: A quality or action appears right or good if and only if you meet it while you are in motion; it appears wrong or bad if and only if you meet it while you are at rest. Thus when one is caught up in a going concern whatever gets in the way is an obstacle and has no right to be there; but if one is a passive on-looker there is no urge to see its opportunities as its rights, and one tends therefore to evaluate them as wrongs. Thus all moral relatives tend to focus around this major distinction. And it is just the relativity of this distinction which increases the difficulty when the moral situation passes over into the social situation. For the activity-passivity antithesis becomes the capitalist-worker conflict, and it is impossible for either participant in the conflict to assume the point of view of the opponent. Professor G. R. Morrow, in a paper entitled "Types of Moral Judgment," insisted that the moral judgment is not one but many. It involves (1) simple judgments of value, i.e., judgments of good; (2) judgments as to rightness or wrongness of acts considered apart from motives, i.e., judgments of right; (3) judgments as to the intentions, motives, dispositions, and character of the agent, i.e., judgments of virtue; and (4) judgments as to the intentions, motives, dispositions, and character of the agent considered with respect to their conditions

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and causes, i.e., judgments of merit. No one of these can rightly claim to be *the* moral judgment for they are all aspects of the complete moral situation. Professor H. O. Eaton argued for a logic specifically adapted to the needs of the social sciences. This, he insisted, must be a logic different from that employed in the study of the natural sciences, and must be built upon a recognition of the presence of value. In the discussion which followed, Professor Parker objected to the contention that axiology is a new logic, and insisted that it is the old logic with a new subject-matter. Professor Bonno Tapper's paper was an exposition of the neo-Kantian philosophy of value as exemplified in Heinrich Rickert and Bruno Bauch. Their philosophy is concerned with two problems, one of which is the problem of transcendence as they inherited it from Kant in the *Ding an sich,* and the other is the problem of objectivity as it is found in the social and cultural sciences. The former problem is solved by Rickert through the feeling of necessity associated with every judgment, and by Bauch through the functional relation of the judgment. The latter problem is solved by resort to a *Kulturleben* existing independently of empirical subjects in which pure values are realized.

If one may judge by the random comments heard in the closing hours of the session, the meetings as a whole were a success. That they were so is due in no small measure to the hospitality of the Michigan members of the association, and to the splendid facilities which the Michigan League building offers as a headquarters for such a gathering. The spirit of the meetings was good though the traditional aloofness of the philosopher from the concerns of practical life was belied by the words which caught one's ears in the general buzz of conversation immediately preceding and immediately following the various sessions. It would seem that the philosophical triumvirate God-freedom-immortality has received a new content: God has become the university treasurer, freedom resolves itself into the opportunity of choosing between alternatives neither of which is at all desirable, and immortality has become the concern of those few individuals who succeed in holding the present soul and body together long enough to make it important.

A. Cornelius Benjamin.

University of Illinois.

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## BOOK REVIEWS

*Mind and Matter.* G. F. Stout. Cambridge: The University Press. New York: The Macmillan Co. 1931. Pp. xiv + 325.

This volume is based upon the Gifford Lectures delivered at the University of Edinburgh in 1919. The argument, while it will

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be convincing to relatively few readers, and while it has little to offer in the way of charm or piquancy of style, has the great merit of being so clearly and systematically set forth that any reader who is reasonably versed in the subject-matter treated can follow it with ease and see exactly at what points he finds it unconvincing.

The first of the four Books into which it is divided defends a conception of science and the scientific method as but one outgrowth, among others, of the Common Sense of Mankind. It is, then, a mere prejudice to assume that the last word lies necessarily with science. Every other development of Common Sense has a *prima facie* validity, "a presumptive claim to acceptance which can be upset only by cogent and positive reasons against it."[1] In the absence of any such cogent reasons for discarding them, three deliverances of Common Sense are accepted as presumably valid.

The first of these is the irresistible tendency to read into nature "some analogue of what we ourselves experience in active movement and in making efforts against resistance."[2] Such active tendencies are not discoverable by natural science, as Hume pointed out; but that is no reason for assuming that they are not there. Primitive man supposed separate physical objects to be animated by separate spirits. But "growing insight into the systematic unity of the material world renders it difficult or impossible to ascribe to such parts or partial aspects of it individual unity and initiative. . . . [Hence] active initiative is ultimately referred to one omnipresent Mind."[3] No positive reason exists for condemning this Causal Animism as illusory, and the presumption in favor of the belief that we "find in our own voluntary action a key to the nature of causal process" is "very strong indeed."[4]

Next, Common Sense "finds" a "teleological order" in nature, "a systematic co-adjustment of part to part within a whole," such that nature is "preadapted to our intelligence." "The more fully and vividly its presence is realized, the stronger is the tendency to see its source in something akin to our own will and intelligence."[5] In particular, the "biological order" "presupposes the operative presence of something essentially akin to our own minds."[6] This view the author calls Teleological Animism.

Thirdly, "the higher emotions aroused by the beautiful and sublime in nature presuppose in nature something akin to and essentially one with our own mental life. This is what we may call Aesthetic Animism." Especially in the experience of the sublime,

[1] P. 10.
[2] P. 17.
[3] P. 21.
[4] P. 22.
[5] Pp. 37–39.
[6] P. 45.

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the subject feels that nature embodies "something essentially akin to himself—something with which he is in sympathetic communion." Thus "in the aesthetic experience we have an independent revelation of an aspect of concrete reality which science, owing to the conditions of its existence, tends to ignore."[7]

From these three quarters, then, we have converging evidence to support what Mr. Stout calls the Animism of Common Sense, the belief that Mind underlies Nature.

Book Two considers the psycho-physical problem. Interactionism is rejected as incredible; for two existents can not interact "unless they are comprehended within a spatio-temporal whole, or some other complex unity." A dualism of matter and mind implies "an unmediated breach in the unity and continuity of the universe." And as a matter of fact, Common Sense does not believe in an immaterial mind, with no locus in space. "A purely immaterial soul, capable of existing apart from any sort of embodiment, is a conception due to the professional metaphysician, alien to, and, I venture to say, really unintelligible to the Common Sense of mankind." What Common Sense really believes in is an *embodied mind,* a mind which "has no being independent of and separable from what it minds, what it is cognisant of and interested in."[8]

On the other hand, materialism is incredible, for we can not "regard mind as arising from anything which is not mind." Materialism implies that it "bursts into being like a shot out of a pistol that is not previously in the pistol." "This position is so intolerable that it has rarely if ever been maintained in its nakedness." It implies "the miracle of creation out of nothing, where the creator is not an omnipotent being, but a finite and transient complex of material phenomena." "The supposed production of mental by merely material occurrences, considered in the only way in which it can be considered, as a example of causal relation, is quite unintelligible. By this I mean not that *we* can not understand it, but that it is from the nature of the case sheer nonsense." "There is no generic character common to what is mental and what is not mental"; "the transition from the absence to the presence of experience can not be a change; it must be an absolute beginning of existence." "If we say that what is mental is caused by purely material conditions, we must use the term 'cause' in a sense radically incompatible with that which we give it elsewhere. We must intend by it 'creation out of nothing.' But, taken literally, these words have no meaning. They stand for no conceivable process."[9]

Parallelism, which remains, is equally incredible if it is taken as

[7] Pp. 49, 54, 58.
[8] Pp. 89, 66, 160, 220.
[9] Pp. 83, 110, 111, 116, 133–135.

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merely applying to the brain-mind situation. For we should have the same miraculous emergence of mind out of nothing. Parallelism becomes intelligible only when we extend it and reach a cosmic parallelism, or double-aspect theory, a view which posits Mind everywhere in Nature. Happily this is the same conclusion which was reached through a scrutiny of extra-scientific Common Sense in Book One.

The remaining Books, Three and Four, once more arrive at this conclusion, through a study of the epistemological problem. First, a direct non-causal theory of perception is accepted, as alone consonant with Common Sense. Sensa are not "ideal representations of a reality beyond them," but "an integral part of the material world." "The sensory continuum of the individual is a partial extract from a world-continuum in which each of us has his own private share, though it also comprehends far more than what is experienced by finite individuals."[10]

And now, we have two sources of knowledge of this world-continuum. "The actual experience which conditions at once our immediate awareness of the embodied self and of objects external to it is of a two-fold nature. It includes in inseparable unity sensation and what we immediately experience in being active and passive—in doing and undergoing." The universe is known "as an extension of what we immediately experience in these two ways, and therefore as continuous with it in existence and fundamentally akin to it in nature."[11] It is, in one aspect, a *more* of the same nature as our sensa; and, in the other aspect, a *more* of the same nature as our conative experience, our sense of activity and strain, interest, and will. In short it is a physical universe, but also a mental universe. The animism of Common Sense is justified.

To the present reviewer it seems that Mr. Stout attributes, throughout the discussion, too great weight to "the demands of Common Sense" (capitalized). Views may seem "absurd," "incredible," "inconceivable," "repugnant" to common sense merely because of a warped comprehension and misleading statement of a problem.

As to the psycho-physical and epistemological arguments (which are, of course, much more subtle and elaborate than a rapid summary could indicate), one would like to ply the author with interrogatories, as:

Has he sufficiently considered the many weighty arguments against epistemological monism? How would he develop his hint that we are to treat "as objectively valid [only]selected perceptual appearances occurring under certain roughly ascertained standard

[10] Pp. 206, 309.
[11] Pp. 246, 309.

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conditions"?[12] And what is the status of the appearances which are *not* objectively valid? When he insists that every theory must start from the empirical fact that in memory we are "directly cognisant" of the bygone experience, and in perception of the physical thing itself, has he grasped the sense in which the American "critical realists" can accept that statement while avoiding the difficulties of naïve realism? When he admits, "We have no right to assume that what *seems* red in a standard perceptual appearance *has* a quality resembling the red sensum, or, indeed, any other colour-sensum; and we have no means of determining in fact or conceiving in thought what the quality is,"[13] how is this consistent with his dictum, "We can not help believing that things are really coloured in fundamentally the same way as they are really extended,"[14] and his repeated assertions that "immediate sense-presentation is that partial extract from [the material] world which is or may be actually experienced by the individual."[15]

Suppose we agree that some version of the cosmic double-aspect theory is the most plausible solution of the psycho-physical problem. Even so, are we warranted (if we reject the "animism of common sense," as having no evidential value) in believing that the psychic aspect of Nature constitutes a vast Mind? On the contrary, if we make our "psychic" story parallel our physical story, as, in some sense, another aspect of it, can we presume its "psychic" nature to be anything more than *something out of which animal minds can naturally develop*—as the highly complex impression- and reaction-mechanisms of animal bodies have developed out of relatively simple forms of matter? Mr. Stout rejects this view for two reasons. First, he holds it to be as absurd to suppose that mere mind-stuff, which is not conscious experience, could generate consciousness, as that matter with no mind-stuff aspect could generate it. The universe must be actually *conscious* or purely material. And secondly, the *unity* of the universe points to its being One vast Mind. . . . Many of us, however, persist in thinking that the unity which the universe exhibits is not enough of a unity, and not the *sort* of unity, to betray the presence of a universal Mind. A mind, we think, is neither a simple, unanalyzable sort of thing, nor a mere causal interplay or overarching unity of psychic stuff. It is a very specific sort of thing, engendered, so far as we can see, only in connection with, or as an aspect of, the specific processes of animal bodies. That there is, outside of this context, anything in the universe even roughly similar to our color-sensations, our emotions, our

[12] P. 273.
[13] P. 279. My italics.
[14] P. 127.
[15] P. 255.

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sensations of strain and activity, our feeling of our own willing and striving, seems unlikely, if we study concretely the nature and conditions of these forms of consciousness. Certainly it does not follow from acceptance of the principle that our mental life has developed out of simpler forms of the same *stuff*—which is all that cosmic parallelism, or panpsychism, need assume. . . . But then, where would be the edifying conclusion? And what would become of the second volume of Mr. Stout's Gifford lectures, which is to appear shortly under the title *God and Nature?*

DURANT DRAKE.

VASSAR COLLEGE.

*The Universe in the Light of Modern Physics.* MAX PLANCK. Translated by W. H. Johnston. New York: W. W. Norton & Co., Inc. 1931. 116 pp.

A book from the discoverer of the quantum is worth reading. This one is no exception to this rule. Writing after many of his colleagues have proclaimed the all-sufficiency of certain new doctrines in physics, Professor Planck has had time to place certain of their notions, such as indeterminism, and conceptualism, in the balanced perspective which only a rich experience and a mind of unusual insight can provide.

In the first section his conception of the relation between science and philosophy appears. There is the sense world in terms of which positivism would conceive of all science, there is the "real world" with which metaphysics is concerned, and between these two there is the world of physics. When attention is concentrated completely on the attainment of logical formulation and consistency in the world of physics, the philosophy of science of the axiomatic school arises. Professor Planck holds that all these emphases are valuable and that none is sufficient. Physics is to be understood as constructing a metaphysical world known by reason in order to predict with reference to the world of sensation, or, stated more fully, physics plays between and depends upon both worlds. When its theories do not change, the emphasis is on the metaphysical side; when, as at present, changes occur, the positivistic emphasis is heralded. It is interesting at the present time when the philosophers, particularly in Germany, are so busily engaged in preaching the old positivistic doctrine, that not one of the outstanding German physicists is a positivist. Planck, along with Sommerfeld, Einstein, and Weyl, holds that physics is metaphysical as well as phenomenological. Even Heisenberg, who originally insisted, probably because his own theory was so extremely abstract and conceptual, that all concepts must be defined in terms of operations, has recently admitted this to be an im-

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possible pious hope. Professor Planck has not permitted himself to be swept away by any of the many methodological doctrines which are so enthusiastically held up at present by many philosophers, in the name of science.

An interesting point with reference to one of these theories, the operational theory of the concept, appears on page 49 in connection with the discussion of the relative merits of quantum and classical theory so far as formulation in terms of observed quantities is concerned. Professor Planck points out "that the question whether a physical magnitude can in principle be observed, or whether a certain question has meaning as applied to physics, can never be answered a priori, but only from the standpoint of a given theory." Several examples are given. This seems to indicate that concepts can not be completely defined in terms of operations, since the operations themselves are meaningless apart from a certain theory, that is, apart from concepts.

The most novel and important part of the book is its defense of causality and dynamical laws, notwithstanding the current emphasis on "the uncertainty principle" and on the primacy of statistical and probability notions.

The last section presents a clear account of the impasse between the wave and the corpuscular theories of light, both of which are demanded by certain facts and incompatible with certain others. Earlier in the book the polar principle calling for both particles and continuous waves is maintained.

One is left with the impression that a balance has been struck between the excesses of previous books in this field. The many unexpected discoveries of current physics are important, but each can not by itself be made the basis for a final philosophical conclusion on the matter. Instead they present problems, yet to be resolved, the solution of which calls for the coöperation of philosopher and physicist. As Professor Planck says in conclusion, "There have been times when science and philosophy were alien, if not actually antagonistic to each other. These times have passed. . . . Modern physics impresses us particularly with the old doctrine which teaches that there are realities existing apart from our sense-perception, and that there are problems and conflicts where these realities are of greater value for us than the richest treasures of the world of experience." It appears that philosophy has the task and privilege of reconstructing its metaphysical conceptions in the light of the new scientific discoveries, with the hope perhaps of even contributing to the resolution of some of the perplexing problems which have arisen.

F. S. C. Northrop.

Yale University.

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*A Study in Æsthetics.* LOUIS ARNAUD REID. London: George Allen and Unwin Ltd. 1931. Pp. 415.

This book reads as if its author were a good listener. His own complex theory is built up and shaped with constant appreciative attention to the literature of the subject. Its formation suggests Pater's description of the nature of Renaissance art: a new art made by the delicate arrangement of the remains of an older art; a new organism conceived by no sudden and abrupt creation, but rather by the action of a new principle on elements already organic. The theories of Santayana, Lipps, Richards, Bosanquet, Alexander, Bell, Abercrombie, Fry are fitted, chipped, pieced out and thus become much of the substance of a new and interesting mosaic. Take his handling of empathy. The experience of beauty certainly involves, Mr. Reid thinks, the extrinsecation and embodiment by a person of certain of his own processes, as Lipps and Vernon Lee and the other empathists teach. But "imputation" is a more accurate word for the process than "feeling into," and what is imputed is not merely bodily motor process, but any one or any combination of bodily or mental fulfilments of tendency. Again, Mr. Reid's beauty as the imputation of value is much like Santayana's beauty as objectified pleasure. But Santayana's conception is altered as it is incorporated into the argument of this book. Value becomes much richer than pleasure, and the mechanism of objectification is explained. A third illustration of the author's craftsmanship is his treatment of Mr. Abercrombie's theory of tragedy: that "out of the final harmony of [good and evil] . . . will come the sense of the significance of evil overriding its injury—the sense that evil is no longer the intrusion of irresponsible and useless malignity, but the servant of universal law. . . . When we ask whence tragic poetry is to provide itself with good to match its evil, the answer can only be, that the good must arise out of the evil. This is what the peculiarity of tragedy comes to: out of things evil it must elicit good" (pp. 347–348). Mr. Reid says he accepts this as an interpretation of one kind of tragedy "up to a point" (p. 349). But he thinks it more accurate to say we enjoy a *tension* of forces than a harmony, and a relationship of persistent qualities of evil and character rather than a change in evil.

But to say that this book is well documented and not naïvely original or fanatical is not to deny its freshness and independence of thought. I do think there is a slight loss of self-contained force in a style which is so constantly respectful to others. Nevertheless there is a sensitive and brooding if not a dashing originality, and a delicate though not a bold springing of ideas. For instance, the fineness of the analysis of "subject-matter" in art, leading up to

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a theory of great art, is so far as I know new. Mr. Reid distinguishes five senses of the term "subject" as applied to art. "What the work of art is about" may refer to any of five entities or perspectives: the subject regarded as an independent fact and as eternally what it is by itself without modification by a human act or interest (ontological subject-matter); the same as matter of commonplace experience (neutral); as related to the ordinary everyday life of the artist (primary); the foregoing beginning to stimulate specifically esthetic activity (secondary); and tertiary subject-matter which is "simply the content side of the work of art" (p. 233). Having made this analysis Mr. Reid proposes an answer to the difficult problem of what is meant by "great" art. Art may be perfect, he maintains, and yet be slight. Greatness is a function not of a work of art as a whole so much as of the distinguishable though not separable "tertiary subject-matter." It is the result of "ocean-experiences" satisfactorily embodied.

There is freshness, again, in Mr. Reid's discussion of medium. "But for the danger of such metaphors it might be interesting to compare the various media of the arts to a series of lenses, ranging from the almost flat lenses of some drama, which reveal essences of the values of real life to us, to the spherical crystal of music, which seems, as we experience it, to create its own life" (p. 280). But, he tells us more than once, although the glassy sphere of music seems to contain "what it is about" in the modifications of its own crystalline substance, there is a sense in which programme music may represent the values of life which exist outside music and yet not be the mere crude mimicry which Plato once for all exhibited for our laughter. We have been told *ad infinitum* that music is not imitative; we have been told by Schopenhauer and his followers that music represents the metaphysical urge of things; but Mr. Reid shows his subtlety in his distance from both these attitudes. He suggests to us that music may embody dramatic universals, qualities of personality, fate, love, country scenes, and yet remain music, never stooping to the mere deceptive trick. One thinks as a parallel of Mr. Rhys Carpenter's treatment of the imitative aspect of architecture.

Respect for the theories of others and unusual capacity for analysis are, then, the strength of this book. They keep the author sane. He knows the part played by meaning in art in spite of Clive Bell and that Croce has over-simplified the problem of degrees of beauty. But they are also the weakness of the book. Because of the influence of Mr. Stapledon he has as it seems to me too narrowly conceived the nature of "value," which is the philosophical basis for his entire doctrine of the esthetic experience.

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What is Mr. Reid's conception of value? "Positive value consists in the fulfilment of needs of living organisms" (p. 122). "The typical case of value within our experience, then, occurs when some hormic tendency of the organism is fulfilled or thwarted. This is an entirely non-mental process and itself constitutes positive or negative value. This bodily process is what we cognise, conate, or espouse and feel to be pleasant or unpleasant. . . . So too there are mental values [which] though mental, are just as objective to the act of their valuation" (p. 124). Mr. Reid is very careful to insist that value is always objective, by which he means distinct from the mental act of valuing, and yet also personal, that is not inherent in the external cause of the human satisfaction. He illustrates his theory by the value to an individual of a fire on a cold day. The value is not in the fire itself, not in any conscious relation to the fire, but in the organic comfort which immediately follows the warming of the body.

There seem to me three symptoms of failure here. Having denied value to the external ground of satisfaction, Mr. Reid has to devise a theory to explain the apparent presence of value in external objects in the case of works of art. This seems to me an artificial labor which falsifies the true nature of experience. Even in the simple case of a fire on a cold day it seems to me undeniable that a part of the value is located by ingenuous consciousness in the fire as a part of the grateful situation. But still less can the fire be disallowed a genuine housing of grateful quality when it is lit not to thaw out frozen members, but to add to the charm for a coming guest. That the fire is part of the seat of value does not mean that it is all of the seat of value, but it seems to me that to make the good of the fire an "imputation," in some sort an illusion, is an unfortunate academicizing of the facts. Secondly, while there is constant insistence that there are original mental values as well as bodily ones, the mental acquire a strange unreality and insignificance from the way they are being constantly admitted as "alsos" and given the quality of inevitable concessions. Nothing in the book seems to me so ghost-like as a mental fact. I no longer recognize what is left when organic processes are excluded and external causes are excluded. Consciousness seems to me throughout the book to be identified with self-consciousness or explicit acts of mind that are reflectively known to be such. The third symptom of the inadequacy of the theory is the major problem that is created and dealt with so ingeniously in the final chapter of the relation of the value in beautiful nature and in beautiful art. How do the values get into beautiful colors and sounds? asks Mr. Reid in Chapter III. "The only possible answer can be that we put them there—in imagi-

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nation'' (p. 79). The expressiveness of a beautiful work of art, for our author, is due to its hospitality to our externalized organic fulfilments. But in Chapter XIV the thesis is expounded and, if not wholly defended, at least in some sense espoused, that the beauty of nature is *in* the body, as beauty is not originally in art. ''The work of art is an aesthetically significant *appearance*, but works of nature, to such nature-lovers, are aesthetically significant *realities*, whose beauty is immanent in them'' (p. 397). The author calls his argument for the beauty of nature ''speculative in the extreme,'' yet he frees it from objections and is friendly to it. But in order to justify the position, he is forced to the elaboration of a vague mysticism, which roots the experience of the nature-lover in the sharing of the joy of God, and in the dichotomizing of mental functioning: the addition of intuition to reason.

The whole book seems to me to exhibit a heaping up of unnecessary and unrecognizable intellectual entities to make good an initial error: the refusal to make value coincident with the whole value situation. Why does not Mr. Reid hold firmly to the implications of the admission on page 79: ''It is no use saying prosaically that values *can not* inhere in sound or colour. . . . The point is that for aesthetic imagination they certainly do so''? This is true, and it seems to me as sound a basis for philosophical superstructure as the mystical feeling that there is beauty in nature. When Heinrich Wölfflin analyzes the structure of baroque or classical buildings he says he is analyzing human nature's mode of vision at a particular period. In tracing the linear qualities of Holbein or the painter-like qualities of Rubens, he is as much discussing spirit as is Croce when he is presenting the intuition-expression. In discussing mind and in discussing value Reid identifies the whole with a part. In discussing beauty he conscientiously couples together the various parts to give the fusion of the whole prized situation, but he made the break that required the joinings.

But though the theory of value here given seems to me inadequate and to depend too much for its proof on the exhibition of a mechanism, I find this lack not typical of the book as a whole. The book seems to me to show not only patience in pressing arguments through, but a background of rich experience both inside and outside art.

KATHARINE GILBERT.

DUKE UNIVERSITY.

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## JOURNALS AND NEW BOOKS

REVUE PHILOSOPHIQUE. 57 Année, Nos. 5 et 6. Les principes de l'esthetique de Kant: *C. Schuwer.* La connaissance comme fait cosmique: *R. Ruyer.* Martin Heidegger et l'ontologie: *E. Levinas.* Le symbolisme verbal et l'exercice de la pensée: *M. Desbiens.*

GIORNALE CRITICO DELLA FILOSOFIA ITALIANA. Annol XIII, Fasc. II. L'origine dell'anima umana secondo Dante (fine): *Bruno Nardi.* La filosofia mistica di F. H. Jacobi (fine): *Bianca Magniño.* Il razionalismo critico di Leon Brunschvicg: *Giorgio Radetti.* Religione e filosofia: *Alfredo Giannotti.*

SCIENTIA. Vol. LI, N. CCXXXIX–3. Neuere Beiträge zur Erforschung des Planeten Mars: *K. Bohlin.* La theorie quantique des corps solides: *L. Brillouin.* La specificità della cellula del cancro: *P. Rondoni.* History as a Science: *F. J. C. Hearnshaw.*

SCIENTIA. Vol. LI, N. CCXL–4. The Spectroscopic Binary Stars: *W. E. Harper.* Sulla geometria dello spazio fisico: *G. Giorgi.* La vie: *N. Koltzoff.* Moderne mythologische Forschung: *M. P. Nilsson.*

SCIENTIA. Vol. LI, CCXLI–5. The Rotation of the Galaxy: *B. Lindblad.* Ramaneffekt und Chemie: *K. W. F. Kohlrausch.* Esistono i gradienti fisiologici di Child?: *S. Ranzi.* La nouvelle anthropologie criminelle: *A. A. Mendes-Correa.*

Berthelot, René: Science et Philosophie chez Goethe. (Bibliothèque de Philosophie Contemporaine.) Paris: Félix Alcan. 1932. 188 pp. 15 fr.

Boughton, Jesse Scott: The Idea of Progress in Philo Judaeus. (Columbia University Ph.D. dissertation, 1932.) Privately printed. ix + 291 pp.

Eastman, Max: The Literary Mind. Its Place In an Age of Science. New York: Chas. Scribner's Sons. 1931. 343 pp. $2.50.

Lemarié, O.: La Morale Privée. Paris: Félix Alcan. 1932. 152 pp. 12 fr.

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Westermarck, Edward: Ethical Relativity. (International Library of Psychology, Philosophy & Scientific Method.) New York: Harcourt, Brace & Co. 1932. xviii + 301 pp. $3.75.

Weyl, Hermann: The Open World. Three Lectures on the Metaphysical Implications of Science. (The Terry Lectures.) New Haven: Yale University Press. 1932. 84 pp. $1.50.

Bailey, Alice A.: From Intellect to Intuition. New York: Lucis Publishing Co. 1932. xv + 271 pp.

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Osty, Eugène, et Marcel Osty. Les Pouvoirs Inconnus et l'Esprit sur la Matière. Premières Etapes d'une Recherche. Paris: Félix Alcan. 1932. 153 pp. 25 frs.

Tennant, F. R.: Philosophy of the Sciences. Or the Relations between Departments of Knowledge. Cambridge: At the University Press. New York: The Macmillan Co. 1932. ix + 191 pp. $1.50.

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## NOTES AND NEWS

The Annual Meeting of the Mind Association will be held this year at The University, Reading, England, at 5 p.m., Friday, July 8, 1932.

It will be followed by a Joint Session with the Aristotelian Society for which the following arrangements have been made:

*Friday, July 8. 8 p.m.* Chairman: Miss L. S. Stebbing.
Address by Professor W. G. de Burgh.

*Saturday July 9. 10 a.m.* Chairman: Professor J. A. Smith.
Symposium: "What is Philosophy"? Mr. J. Wolfenden, Professor F. C. S. Schiller, Professor J. Macmurray.
*8 p.m.* Chairman: Professor G. Dawes Hicks.
Symposium: "Phenomenology." Mr. G. Ryle, Mr. H. A. Hodges, Mr. H. B. Acton.

*Sunday, July 10. 10 a.m.* Chairman: The Provost of Oriel.
Symposium: "Is Goodness a Quality"? Professor G. E. Moore, Mr. H. W. B. Joseph, Professor A. E. Taylor.
*8 p.m.* Chairman: Professor S. Alexander.
Symposium: "The Limits of Psychology in Aesthetic Theory." Dr. L. A. Reid, Mrs. Helen Knight, Mr. C. E. M. Joad.

There will be a charge of 10s as a Registration Fee for Membership of the Joint Session. The papers will be published by the Aristotelian Society as a Supplementary Volume, which will be sent free of charge to all who have paid the Registration Fee. It is hoped that the volume will be ready in time to be distributed before the opening of the Joint Session.

Applications for membership and for information should be addressed to A. W. Wolters, Esq., The University, Reading, England.

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Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 6. March 17, 1932.**

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Fichte's Conception of a League of Nations. A. C. ARMSTRONG.
Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 7. March 31, 1932.**

Mr. Lewis and the *A Priori:* ARTHUR E. MURPHY.
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Some Early Holistic Psychologists. W. D. COMMINS.
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Superstition and Logic. WENDELL T. BUSH.
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# THE JOURNAL OF PHILOSOPHY

## DUALISMS GOOD AND BAD (I)

SINCE the generously full discussion[1] which Professor Murphy has given in this journal to my volume of Carus Lectures[2] deals with some philosophical questions of importance, and presents some criticisms of the doctrine therein defended which are also important if valid, it in turn seems to demand a not incommensurate examination. I wish it were possible to proceed at once to the consideration of *his* theses and reasonings on their merits, without reference to my book. But his reasonings are largely interwoven with an exposition of the contentions of the book and of the arguments upon which—as he supposes—they depend; and several of these he has most ingeniously misconceived, and therefore unwittingly misreported to his readers. It seems necessary, therefore, to point out some of the more serious of these misinterpretations. Four of them may be fairly briefly disposed of at the outset.

1. "The basis of Mr. Lovejoy's dualism," says Mr. Murphy, "is common sense. In this it finds its initial inspiration and its unfailing criterion for judgment of opposing theories." It treats common sense as an "oracle on matters of philosophical import." These sentences, so far as they have intelligible meaning, can hardly fail to convey to the reader a complete misconception of the method and grounds of the argument for dualism which the book presents. "Common sense" is, it is true, a notoriously vague term. It presumably refers to the unexamined beliefs or assumptions of the "plain man." But there are many degrees of "plainness" among men; and with respect to the epistemological question, it is probable that the average man's conceptions fluctuate confusedly between naïve realism, i.e., a form of epistemological monism, and epistemological dualism. He apparently supposes that in normal and veridical perception he apprehends external objects directly; but when he bethinks himself of the fact or the possibility of error, he is pretty certain to say that this consists in having a "wrong idea" of the object; and between the memory image and

[1] "Mr. Lovejoy's Counter-Revolution," in Volume XXVIII (1931), pp. 29–42 and 57–71, hereafter cited as *LC*.

[2] *The Revolt against Dualism*, 1930, hereafter cited as *RD*.



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the event remembered he appears to distinguish sharply. In philosophical terminology "the philosophy of common sense" is the name for an early modern attempt at a revolt against epistemological dualism; nothing, therefore, could well be more misleading than to describe in the terms used by Mr. Murphy an argument designed to show that no such attempt has been or can be successful. In any case, that argument employs no such short and easy method as an appeal to "common sense" as an "oracle" and "unfailing criterion"; of this fact I fear that most readers of the volume are all too painfully aware. The first four-fifths of it are almost wholly occupied with the proof of a single *hypothetical* proposition, viz., that "when the existence of a real and at least in some measure knowable physical world is postulated," neither the epistemological nor the psychophysical "sort of dualism can be avoided without contradiction either of the implications of realism or of admitted facts."[3] This thesis is defended by an analysis showing that certain specific facts or scientific theorems, some or all of which are accepted by all realistic philosophers, are irreconcilable with one or the other sort of monism or with both; by a proof that realism can not be consistently and intelligibly stated in terms of a monistic theory of knowledge; and by a somewhat minute examination of certain of the more important among recent realistic philosophies, designed to show that, when their presuppositions are made clear and their implications developed, they break down into both sorts of dualism, despite the evident desire of their authors to avoid one or the other or both. This procedure, which is not only followed in fact but also explicitly formulated (pp. 259–265), does not seem to me to correspond closely to Mr. Murphy's description. It is true that the *realistic* hypothesis appears to be held in some form by all "plain men," by most men of science, and, in their habitual thinking, by most, and probably all, of the philosophers who nominally reject it; and this fact, though not presented as demonstrative, is treated as establishing a presumption in favor of realism, so long as its impossibility lacks proof. But the case for realism should not be confused with the hypothetical arguments for dualism—i.e., that *if* you are a realist, you must necessarily be both kinds of dualist, and that even if you are an idealist, you must necessarily be at least an epistemological dualist.[4] As for the realistic hypothesis, Mr. Murphy apparently includes himself among those who "sympathize most heartily with" my "remarks on the validity of common-sense realism and the fatuity of recent attempts to avoid its solidly grounded conclusions."

[3] *RD*, p. 259.

[4] The argument for this last is given in *RD*, pp. 303–318.

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2. He goes on (p. 32) to represent me, to my great astonishment, as "asserting quite vehemently that the charge of 'bifurcation' is wholly unjust as applied to traditional dualism and involves 'a complete misconception' of that doctrine," and supports this statement by a footnote reference to a page (87) of *RD*. I have never asserted this, "vehemently" or otherwise, either of the "traditional dualism" or of my own; I have repeatedly asserted the contrary; and this sentence, with the reference given, is simply a bald misquotation. It is true that the words "a complete misconception" occur on the page mentioned, and the word "bifurcation" on other pages; but the former phrase is not applied to "the charge of bifurcation" (which I do not regard as a "charge" but as a eulogy), and there is in the text nothing to suggest, even remotely, that they are meant to be applied to it. It is similarly true that on one page of the Book of Proverbs occur the words "the slothful man" and on another the words "is the delight of the Lord"; but even in the astonishing history of biblical exegesis this has never, I imagine, been taken as showing that the Book of Proverbs "vehemently asserts" that laziness is a religious duty.

3. Mr. Murphy's readers are told (p. 33) that "the only motives" which I "can assign for the revolt against dualism" are "a mere desire for theoretical neatness or an aversion to the accepted terminology of epistemology"—which seem to him grossly inadequate to explain "a revolution in philosophy" of such scope and importance. The fact is that, for the first phase of the revolt alone, some seventeen motives are enumerated and expounded; that for the later phase several more are distinguished; that those which I am supposed to have declared to be "the only motives" are not mentioned at all—unless Mr. Murphy regards "a mere desire for theoretical neatness" as a fair synonym for "the assumption of the eventual unifiability of our understanding of things and the continuity and fundamental homogeneity of nature"; and that especial emphasis is laid upon the naturalness and inevitability of the uprising, and upon the *prima-facie* force and reasonableness of many of the considerations which generated it.[5]

4. In expounding the "true inwardness" of my criticism of "objective relativism" Mr. Murphy again juxtaposes two propositions

[5] E.g., pp. 34, 35, 36, 52, 54, 86, 260. I suppose Mr. Murphy's reference to an "aversion to the accepted terminology of epistemology" is due to a remark of mine that a number of contemporary philosophers still like to employ the language of epistemological monism after having given up its substance. But this is not, of course, suggested as a "motive for the revolt"; it is an illustration of the hold which the earlier mentioned motives still have upon the minds of these philosophers, in spite of their inability to adhere consistently to a monistic view.

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which undeniably occur in the book on different pages, and then represents one of them as a deduction from the other—the supposed deduction being the opposite to that which is in fact drawn.

> From the assertion that the events of which we are directly aware are ultimate irreducible occurrences which are not mere appearances of anything else Mr. Lovejoy draws the conclusion that his critics must hold that "everything truly is all the things that it appears to any and all percipients (or concipients) to be." Thus my confession of faith that my liking for cucumbers is an ultimate fact "which no further information can discredit" is supposed to involve the consequence that, since this "appearance" is ultimate, my liking for cucumbers "ultimately" is whatever it *appears* to any "percipient (or concipient)" to be [LC, p. 37].

Here the conclusion of one argument (*RD*, pp. 127–128) is attached to the premise of another (*ibid.*, p. 129). The consequence which was said to be involved in the admittedly "ultimate" fact of a certain philosopher's liking for cucumbers was that this fact *can not* be "whatever it appears to any and all percipients (or concipients) to be"—unless it appears to them all in the same way, regardless of "perspectives." "If other minds are to know truly the philosopher-cucumber relation, they must know it as that philosopher knows it, be *their* standpoints with respect to him, or with respect to cucumbers, what they may" (*RD*, p. 129). On the other hand, the conclusion also *was* drawn that the consistent "objective relativist" ought to hold that "everything truly is all the things that it appears to any and all percipients (or concipients) to be"; but it was drawn, not from the premise mentioned, but from the fact that the relativist asserts the epistemological objectivity of all "perspectives"; in Mr. Murphy's own words (cited *RD*, p. 128) that, "given a specified"—which presumably means, and certainly, in consistency with certain of the relativist's principles, should mean, *any* specified—"standpoint, the truth is quite final and ultimate"; in short, that if *A* likes cucumbers and *B*, having a standpoint of his own, feels sure that nobody can like cucumbers, both—on the assumption of the *cognitive* ultimacy of *every* standpoint—"must be admitted by the relativist to be right. This odd inversion of the entire logic of my criticism of the "doctrine of perspectives" in objective relativism renders much of the defense of that philosophy beside the mark.

However, while Mr. Murphy strangely distorts or precisely inverts the position of the book he is discussing on the foregoing matters, he presently draws up its conclusions in four propositions which I should accept as a fair statement of certain of the most essential points of the dualism that I have defended: (1) "Ordinary experience is significant of objects which are permanent, common,

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and independent of the observers who claim to know them." (2) "While experience somehow reveals such objects, its 'contents' considered in themselves as particular events do not constitute them." (3) "In spite of this distinction between the immediate being of experienced events and their representative function, these events do reveal or give us knowledge of 'external objects' and this knowledge is indirect in the sense that the 'data' upon which we base our conclusion are not the objects which our knowledge claims to be about."[6] (4) "Data as such and in their immediate being are not physical objects."[7]

Now these, if true, are surely important and far-reaching conclusions; and Mr. Murphy agrees that they are true. On these points the dualist "has all the best of the argument."[8] But these four theorems, taken in their natural sense, are the fundamentals of the dualistic philosophy; in accepting them Mr. Murphy has made the decisive confession of faith—though it contains more implications than he appears to be yet aware of—and has taken his stand as an open counter-revolutionist. On essentials, then, it would thus far appear that we are in complete agreement. But to these essentials it seems to Mr. Murphy that "common sense," and I, as its too servile adherent, make certain additions which are not merely erroneous in themselves, but give to "every one of the plausible and innocuous propositions outlined above . . . a new and sinister meaning."[9] And it is to elucidating "the nature of this transformation" by which a Good Dualism is turned into a Bad Dualism that he chiefly devotes himself in the first part of his discussion.

This metamorphosis, it appears, is brought about by the following remarkable piece of reasoning, the component parts of which Mr. Murphy believes to be actually discernible in *The Revolt against Dualism*, needing only his combining hand to bring them together so as to make evident their absurdity as a whole. (*a*) The immediate data (sensa, *etc.*) present in a cognitive experience are never objects of knowledge. (*b*) These data therefore are intrinsically incapable of being known. (*c*) What is intrinsically incapable of being known can not be asserted to exist. (*d*) Therefore data (or "experienced events") can not be asserted to exist. (*e*) Nevertheless it is evident, and is also admitted, that they actually do exist. (*f*) *Ergo,*

[6] *LC*, p. 31. The term "external objects" is somewhat equivocal; but I assume that Mr. Murphy means to include "physical objects" in its denotation.

[7] *Ibid.*, p. 35.

[8] *LC*, p. 32; *cf.* p. 31: "So far [i.e., as far as the first three propositions], Mr. Lovejoy's thesis seems to me valid"; and pp. 34–35, where the truth of the fourth proposition is asserted.

[9] *LC*, p. 32; the specific reference is to the first three propositions mentioned.

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"certain actual existences do not really exist."[10] The Good Dualism denies propositions (*a*) and (*b*), and therefore escapes the absurd consequences, (*d*) and (*f*), which they entail. In Mr. Murphy's words, the view which is to be accepted is that

> [*g*] data are real natural events, objective in the sense that they are the objects of true judgment and may be known as such without the intervention of any copy or representation whatever. Thus "objective relativism" regards such events as ultimate in the sense that [*h*] whatever properties they possess under such conditions they do really possess. . . . To know such events ["the data of experience"] requires no further reference to a "preferentially objective" object unless we must always assume that [*i*] immediate experience is always a way of knowing about something other than itself, and is nothing else.[11]

Now since Mr. Murphy supposes that the fantastic sorites consisting of propositions (*a*) to (*f*) is to be found in my book, I can only admire the courteous restraint of his language about it. But of course this Bad Dualism is wholly a figment of Mr. Murphy's imagination. No dualist of whom I have ever heard affirms propositions (*a*), (*b*) and (*i*), in the sense which Mr. Murphy gives to them, or denies propositions (*g*) and (*h*); certainly I have never done so; and on this count, even "common sense," I am sure, is innocent.[12] Mr. Murphy's belief that this sort of Bad Dualism is actually held by me and others seems to be due to an ambiguity attaching to the verb "to know"—an ambiguity which several recent writers have noted, and to which I have called attention.[13] It seems needful, however, to repeat the distinction.

The word "knowing" has in current epistemological use two senses (pertinent to the present question). It may be used to include the immediate awareness of any passing and private data (what Mr. Murphy calls "data as such and in their immediate being"), or it may be restricted to the apprehension of objects (or of facts, particular or general) not thus immediately given, i.e., not

[10] *LC*, p. 34; for the other propositions, *cf.* pp. 34–37 *passim*.

[11] *Ibid.*, p. 35. I have inserted letters in brackets for convenience of reference.

[12] There is one sentence in *RD* which may possibly be partly responsible for Mr. Murphy's supposition, though he does not mention it: "With the very debatable exception of pure self-awareness, the existents which get reported must always be in fact external to the situations of the knower, of the cognitive event, and of the data without which, nevertheless, those existents would never be known" (p. 316). It had never occurred to me that this would be construed by anyone to mean that we are not *aware* of the data by means of which the existents external to the private and passing cognitive event are, in the very same sentence, said to "get reported." But if the sentence suggests this meaning, it is badly expressed. The contrary thesis is, in any case, elsewhere repeatedly affirmed.

[13] *E.g.*, *RD*, p. 230: "Of the existence and character of our purely sensuous content in each specious present we have an immediate awareness—though it is questionable whether this should be called 'knowledge.'"

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existentially identical with the datum present in the cognitive event in which they are known. For the consistent epistemological monist this distinction, it is true, is inadmissible, since he nominally holds that data are always identical with the objects known by means of them. But there appear in fact to be no completely consistent epistemological monists; and in any case, the pertinent matter here is merely the dualist's use of "knowing." It is important to have some terminological means for distinguishing these two essentially different modes of apprehension; and for this purpose it has seemed to me—as it has to others, e.g., to Dewey, at least, in some passages, and to C. I. Lewis [14]—convenient to employ "knowing" solely in the second sense, i.e., in the sense of mediate apprehension. But this usage obviously does not imply that data are not "known" in the *other* sense, which is Mr. Murphy's sense; on the contrary, it implies, what the dualist also expressly and constantly asserts, that in that sense they *are* "known." It does not imply that they do not "actually exist," or that they are not "real natural events," or that they "do not really possess" whatever properties they are immediately experienced as possessing. When Mr. Murphy tells his readers that "Mr. Lovejoy plainly denies that the revelation of 'the characters which reality happens to take on' in particular perspectives is *some* knowledge *of reality*," I can but marvel at the ingenuity which can convert into the "plain denial" of a proposition the statement that it is "beyond dispute." [15]

Mr. Murphy's "sinister transformation," then, is but a hobgoblin which he has himself conjured up; and it gains whatever appearance of substantiality it may have from a confusion of terms. Now he is aware that the distinction between the two senses of knowing had been drawn by me; "at times," he grants, I speak "as if the issue were simply verbal; immediate experience ought not to be *called* knowledge, but it is a certain and adequate basis for knowl-

[14] *Cf.*, e.g., *Mind and the World Order*, p. 118: "There is no knowledge merely by acquaintance; . . . knowledge always transcends the immediately given. The merely contemplated or enjoyed may possess esthetic significance, but if it is to have cognitive meaning this immediacy must become the subject of an interpretation which transcends it." P. 120: "That there is direct apprehension of the immediate, it would be absurd to deny; but confusion is likely to arise if we call it 'knowledge.'"

[15] *Cf.*, *RD*, pp. 126–127, *à propos* of "the observation that if a thing has such and such a character from a given standpoint and in a particular perspective then it has that character from that standpoint and in that perspective." "This tautological proposition is beyond dispute—and wholly irrelevant. The question at issue is whether the awareness of a character found only in one perspective and determined by a private standpoint is *enough* to constitute what is commonly understood, by science as well as by common sense, as 'knowing.'" This same irrelevant tautology Mr. Murphy still seems to find pregnant with some momentous revelation.

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edge."[16] But he is determined to have me a Bad Dualist in spite of myself; he can not believe that I do not, implicitly if not explicitly, "deny the reality of our knowledge of data." He therefore cites my "own statement" as "revealing the impossibility" of evading this consequence. This statement was to the effect that data *do* exist, and that our acquaintance with their nature and their existence is, "in one sense, ultimate and absolute," since "about *them* there not only need be but, at the moment of their sensible presence, there *can* be, no error"; but that "this very ultimacy is the mark of the subjective in the epistemological sense. When immediate data are simply taken as ultimate—as not claiming to express the character of something beyond themselves . . .—they are *eo ipso* taken as 'mere appearances,' innocent of epistemic pretensions."[17] Now to one who accepts, as does Mr. Murphy, the four essential theorems of the Good Dualism earlier cited, these observations should appear both innocuous and obvious; for they are only another way of putting what is contained in those theorems, especially in (2), (3), and (4). If "data" or "the contents of experience," in "their immediate being," are not constitutive of nor identical with "the external objects which they reveal," then manifestly, when they *are* "taken as not claiming to express the character" of external objects, they do not, for one who so takes them, express that character—which is what is meant by describing them as "subjective in the epistemological sense." Again, to say that, if so taken, they are "innocent of epistemic pretensions" in no more than tautology, when "knowing" is understood in the second sense—i.e., as meaning an apprehension of objects not identical with the data, which the passage itself shows to be the sense intended. When the distinction of the two senses is born in mind, there is still nothing in the "statement" of which Mr. Murphy makes so much that in any way suggests that the "objects of immediate experiencing" are not "realities on their own account, ultimate not as representations but as occurrences";[18] on the contrary, that is precisely, and obviously, what it is asserted that they are. And he himself elsewhere expressly recognizes that this is the dualistic position, and my own; the assumption which he has hitherto represented me as denying, he now correctly represents me as affirming as "fundamental," viz., "that even the most private, contingent and transitory elements of experience, the characters which reality 'happens to take on' in particular perspectives, are realities of their own sort and can be known for what they really are."[19]

[16] *LC*, p. 36. The final clause is not an altogether exact statement of my view; I should qualify both adjectives.

[17] *RD*, p. 127.

[18] *LC*, p. 36.

[19] *LC*, p. 62.

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There is, however, another reason why Mr. Murphy thinks that the kind of dualism which I have endeavored to vindicate is committed to the thesis "that data have not the properties requisite for an object of knowledge." He supposes, namely, that I have "always supported [my] claim at this point by the argument that they [data] are not true parts of the physical world." That they are not, Mr. Murphy, as we have seen, agrees; but what, he asks, makes me "believe that the non-physical status of the datum disqualifies it as an object of knowledge?" The conclusion would follow only if it could be shown that *none but* physical objects "are the proper objectives of our knowing."[19a] I reply that I do not hold, and to the best of my recollection have never suggested, that the non-physical status of the datum disqualifies it as an object of knowledge, in the first sense of "knowledge." It does, however, obviously disqualify it as a means of *direct* knowledge of *physical* objects. That data can be, in Mr. Murphy's sense, "objects of knowledge," i.e., of immediate awareness, I have constantly assumed and repeatedly asserted—though I think that this way of using the term "objects" tends to blur an important distinction and ought therefore to be avoided. And data, as well as physical things, may, of course, also become objects of mediate knowledge—knowledge in the second sense—e.g., when I remember my past sensations or apprehend my neighbor's thoughts or emotions. But they manifestly can do so only in some cognitive experience in which they are not present "in their immediate being." If John's data are never existentially identical with James's, and yet are in some degree known by James, then it is about data that James is knowing, but about data which have not *for him* the status of data, so that there is no inherent impossibility that he may be in error about them.

So far, then, it pleasantly appears that Mr. Murphy and I are in full accord as to substance of doctrine. And if he now means by "objective relativism," as some passages would seem to imply,[20] nothing more than the four essential theorems of the Good Dualism, together with the three truistic supplementary propositions that (5) data, or events of experience, "actually exist," (6) that they can be "objects of knowledge" in the first sense of "to know," and even, with an obviously necessary qualification, in the second sense, and (7) that they really possess whatever characters they are immediately experienced as possessing—then I am happy to find that I am a perfectly good "objective relativist," as, I suppose, all other philosophers who have accepted both sorts of dualism have always been. But it must be added that this does not appear to be the objective relativism which others hold, or have held, and to

[19a] *LC*, p. 34.

[20] E.g., *LC*, pp. 35–38.

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which Mr. Murphy himself once stood sponsor in baptism; and I fear that it is not what he really, or on the whole, designates by that name now. On the contrary I am forced to conclude that he means by it a view which is wholly inconsistent with the Good Dualism summed up in the above propositions 1 to 7. In its logical structure Mr. Murphy's paper seems to fall into two parts: first, the affirmation and defense of a series of theses which are both epistemologically and psychophysically dualistic, i.e., are identical with the principal contentions of *RD;* and second, a series of arguments which are equivalent to a repudiation and attempted refutation of the same theses. It is not difficult to show that Mr. Murphy thus takes both sides on three specific and fundamental questions: *A,* of epistemological dualism, especially with reference to our knowledge of the external world; *B,* of physical realism; *C,* of the physicality of the immediate data of cognitive experience, especially in perception. I should not dwell upon these contradictions if they were merely casual inconsistencies of an individual. But there is reason to think that others also are attempting to avoid the logically ineluctable choice between these alternatives by embracing both by turns; and it is primarily upon the necessity of making choice that I wish to insist. I shall, however, also seek to show that Mr. Murphy offers no convincing reason for accepting one of the pair of opposite views propounded on each of these questions.

*A.* Mr. Murphy's negation of the epistemological dualism which, as we have seen, he also quite unequivocally affirms, is due to an aversion to the theory of representative ideas, or, as he usually prefers to call it, the "copy theory of knowledge." This theory, it now appears, is for him the most distinctive mark of a Bad Dualism; its rejection is essential since, he thinks, it is a doctrine which renders the possibility of knowledge inconceivable. The way of escape from it is to be found in the consideration already mentioned, that "data as such and in their immediate being are real natural events" which "may be known without the intervention of any copy or representation whatever." In this last the confusion of issues is patent. When we are aware of data "as such and in their immediate being," we are of course "knowing" them (in the first sense of "knowing") without any copy or representation. But this tautology does not in the least solve or alleviate the problem of "knowledge" in the second sense; it does not even attempt to describe what it is that occurs when, by means of present and private data, I know objects which are not private, not present, and not "given," but are apprehended as having their own transcendent date and locus and mode of being. But Mr. Murphy is himself committed to the four essential dualistic theorems; admittedly,

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"*some* knowing is indirect and hence in some sense 'representative.'"[21] And it is with this class of knowings that the dualistic epistemologist is concerned; the other class gives rise to no epistemological problem. The theory of representative ideas is an answer to the question: "In what kind of event does a knowing of a transcendent object consist?" To this question I am unable to see that any definite answer *other* than a copy theory is suggested by Mr. Murphy; certainly, to iterate and reiterate the undisputed truth that direct "knowing" (i.e., knowing of "data as such and in their immediate being") *is* direct is not to face this issue, but is simply to persist in looking in another direction. Yet the question can be avoided only by abandoning the dualistic theses which he has pronounced valid.

It is in fact to a copy theory (or to what he presumably would call such, if it were uttered by another) that he himself resorts, when it becomes necessary to give some sort of account of indirect knowing. Thus he accepts it as "a perfectly just observation" that his "liking for cucumbers is a common object to which all judgments *about it* refer, and to which, if true, they must conform" (p. 37). The judgments in question are, of course, the judgments of other persons, for whom Mr. Murphy's taste for cucumbers is not a datum of immediate experience, but a transcendent object. What, then, can be meant by the "conformity" of the data of these other persons, at the moment when they are making such a judgment, to an object which is not their data? Presumably, that there is then being experienced by them a complex of content which includes some "representation" of the liker of cucumbers (such representations potentially ranging from a vivid visual image to whatever vague meaning is associated with the term "a philosopher"), a representation, also, of cucumbers, of the experience of liking, *etc.* No one, I suppose, holds that the "copy" of the total object of judgment in such a case consists in the knower's experiencing a liking for cucumbers, any more than John's knowledge that James has a toothache consists in John's having a toothache. But it can not—if there is any such event as an indirect knowing—consist in anything less than the presence to some consciousness of a group of meaningful "ideas" of the attributes of a philosopher, of a certain green vegetable, of a certain kind of emotional state, and the like, together with concepts of certain relations between them, these qualitative and relational characters being at the same time conceptually extrapolated, as predicates of something existentially other than the data—namely, as predicates of the potentially "common object to which the judgment refers"; to which, if it is to be true, it must "conform"; but about which it may at least conceivably err.

[21] *LC*, pp. 33, 38.

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Nevertheless, the familiar Berkeleian and neo-realistic argument that if data were other than their *cognoscenda* the latter could never be known is persistently urged. E.g., upon the representative theory,

> the resemblance of real objects to data is not available since it is never a possession of the datum and *therefore not* capable of exhibiting the reality to which it refers. The criticism is fundamental. In sum it amounts to the assertion that a datum which is relevant to knowledge *merely* as a representation can not be known to be a representation, for the relation in respect of which it guarantees knowledge is precisely the one which it can not be known to possess. . . . On this [the representative] theory the only properties in the experienced world which are relevant to knowledge . . . require validation in terms of a further relation which the whole experienced, and experienceable world essentially lacks and therefore can not reproduce.[22]

So, again, it is argued that the "familiar dilemma" urged against the dualist is a valid one. Either the relatedness of the symbol which is present in a cognitive event to the not-present reality which it symbolizes is actually "given" in the cognitive event (which can only mean, is itself a datum), or it is not. "If it is given, it is not," for the dualist, "knowledge; if it justifies knowledge, it can not be verified in the given." [23]

All this, however, does not, in Mr. Murphy's opinion, "mean that indirect knowledge is impossible." But that, I suggest, is precisely what it does and must mean, if it is to mean anything. The reasons offered for holding that it does not mean this are instructive. (*a*) "There are many things that we can know about data that furnish some information as to their origin and conditions. (*b*) But this is precisely because they are not known as mere appearances of something else whose characters they reproduce. (*c*) The discovery of ashes is some reason for supposing that a fire has occurred. But ashes do not possess any of the essential properties of fire, and whether the idea of ashes resembles real ashes we probably shall never know." [24]

In considering these reasons it is necessary to keep in mind two facts which, though they have perhaps been here forgotten by Mr. Murphy, will hardly be denied. First, all actual knowings, as events in human experience, are *particular* events. Each of them is "mine and not yours, or yours and not mine, and it is now and not then, or then and not now." Each, in short, has as a natural existent narrow limits; how narrow it is not for the present purpose essential to discuss. Second, in any such particular cognitive event data (in the psychological, not the logical, sense) of some kind are present, are there for awareness; and these particular data, being

[22] *LC*, pp. 39–40.
[23] *Ibid*, p. 69.
[24] *Ibid*, p. 40.

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parts of the concrete event, share its limits in time and in individual experience.[25] This being premised, let us examine Mr. Murphy's reasons. (*a*) Are the things which "furnish information about the origin and conditions" of a datum which is present in a given cognitive experience of mine, *E*, occurring at a time *T*, themselves data temporarily compresent with it within that experience? If they are (i.e., when the cognitive experience occurs), then assuredly they are "known," but they are known directly *by me, now* and the fact they are *thus* known is no example of "indirect knowledge." If, on the other hand, it is assumed—as Mr. Murphy apparently intends us to assume—that the things which I now know or suppose to be "the origin and conditions" of my present datum or data are existentially external, in time or otherwise, to the experience in which I know them, then I now know them indirectly. To say that I do so is simply another way of saying that they are *not* data included within the limits of *E*. But the arguments which Mr. Murphy has advanced against the representative theory would, if valid, show *any* such indirect knowing to be impossible. For the transcendent relation between the things external to the particular cognitive experience and the data included within it, is not itself included within its existential limits. If it were, both its terms would also have to be so included, i.e., would become my present, immediate, and indubitable data, and we should again have before us simply a case of direct knowledge. Now, *every particular knowing* either is a case of direct knowing, or else it is a knowing *of* events external to it, i.e., to the data which are its components. And in the latter case, "the relation in respect of which the datum guarantees knowledge is," according to Mr. Murphy, "precisely the one which it can not be known to possess"—this supposed impossibility lying, it is evident, in the implied externality of one of the terms of that supposed relation to the existential confines of whatever cognitive event may be in question. But all knowings being particular and limited, *in no concrete instance of knowing* is the relation required by the concept of indirect or transcendent knowledge empirically given; it is "a relation which the whole experienced and experienceable world essentially lacks." Even in memory, for example, the relation of *actual* temporal externality between the present image and the remembered experience, as existences, was not given as a part of the original experience, nor is it given as a datum in the present experience of recollection. In the one case one term of the relation is literally present, in the other case the other term is present; in neither case are both present at once. The actual resemblance of a memory-

[25] Of course if data are, in one sense, "essences," they are neither in time nor individual experience; but I do not wish to go over that old issue again here.

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datum to its object is in fact no more a "possession of the datum" than the resemblance of a perceptual or conceptual datum to an external physical object. Nevertheless, we have a perfectly clear idea of such resemblance; without it no such experience as recalling things past would ever be possible to us.

I pass on to Mr. Murphy's other reasons for thinking that his argument "does not mean that indirect knowledge is impossible." (*b*) The second seems to be only a repetition of the confusion of issues already noted. We can, it is explained, know many things about the origin and conditions of data "precisely because the data are not known as mere appearances of something else whose characters they reproduce." No one, as has been pointed out, maintains that data are "known as *mere* appearances of something else"; they are also known, in the first sense of "knowing," as what they themselves "in their immediate being" are experienced as. But this, once more, does not help us to understand how our direct knowledge of them furnishes an indirect knowledge of other things —unless it is admitted that they present or "reproduce," within the particular cognitive event, *some* quality, or relational pattern, or recognized symbolic counterpart, of things external to that event. (*c*) At the moment when, observing ashes, I suppose that a fire has occurred, the object of reference of my judgment is not ashes but a fire; and there must, it would appear, be some datum present to my consciousness which in some way represents a fire. This datum assuredly is not the percept of the ashes. Mr. Murphy here, as in several other passages, seems to confuse the logical with the psychological and epistemological meeting of "datum." The ashes are the ground of inference to the previous occurrence of a fire; but they are not the present datum by means of which the absent fire is here and now made an object of awareness. If I had present to my consciousness nothing but the immediate visible appearances of ashes, I should not be supposing anything whatever about a fire. But since the fire, at such a moment of inference, *is* absent, a representative idea of *it* is indispensable to my then knowing or supposal. I must at the least represent it as "something quite different from ashes, but causally related to the production of them"; and in most such cases I am likely to have present some actual visual imagery of flames and smoke. And between this present representative idea and the absent fire the relation must, once more, be that of mutual externality—which Mr. Murphy's argument against the representative theory would prove to be inconsistent with my knowing the fire at all.

It is, indeed, suggested that "there are other relations than that of copying that *can* afford knowledge of related terms without an independent knowledge of the intrinsic properties of both terms

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related. If *these* relations were relevant, and if their presence in the given situation were itself some foundation in objective reality for conclusions about them rather than their archetypes, the condition would be different. But that, for the type of dualism against which the criticism is directed, "is a condition contrary to fact."[26] Mr. Murphy does not tell us what these other relations are; but it makes no difference, so far as the present issue is concerned, what they are. Either they and their terms are experienced in the present cognitive event as immediate data, or they are not. If they always are, there is no knowledge of anything other than immediate data existing now and as *my* data, and all knowledge has the certainty attaching to immediacy. If they are not, the knowledge which they afford is indirect, i.e., is mediated through existents which are not identical with the realities known. But the arguments which Mr. Murphy has been urging against the theory of representative ideas would be equally pertinent to this last, or any other, recognition of the actual occurrence of knowledge of anything but immediate data while and in so far as they are immediate.

This objection is, nevertheless, pushed so far as to involve Mr. Murphy in singular paradoxes. They are paradoxes inherent in the epistemological monism which he has first rejected, but is here defending. Other men's illusory experiences are a case in point. He argues that my "theory can not justify the claim to know that such entities" as pink rats "are occurent in the experience of some percipients." For pink rats are supposed to be "epistemologically subjective." A sober man, it is implied by that theory, could "make no possible claim to a positive knowledge" that dipsomaniacs sometimes experience images of pink rats. But how, I ask, does Mr. Murphy think that *he* knows that those unfortunates have such experiences? Does he maintain that he not only directly experiences the very same pink rats as the drunkard, but also directly experiences the fact that they are directly experienced by the drunkard? If not, he is—upon the assumptions of his present argument—as much debarred as any abstemious dualist from "claiming a positive knowledge" either about pink rats or about the subjective phenomena of alcoholic delirium. If he thinks he knows about them, but *not* in this immediate manner, he implies the invalidity of the objection which he has raised.

Epistemological dualism—and therewith the conceivability of indirect knowledge—is most plainly of all denied by Mr. Murphy when he comments on the myth with which *RD* ends. The passage was designed to sum up briefly and in untechnical terms the essential peculiarity of knowing as a natural event. It declares that what is needful for knowledge—if there *is* to be knowledge of anything but

[26] *Ibid.*, p. 69.

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the immediate and transient datum—is that "the nature [let us here call it *A*] which belongs to one region of being shall be not only reproduced in another [*B*] nor merely, when so reproduced, be beheld by a creature having its existence in that other region, but that it shall be reproduced and beheld as if present in the region in which it first existed and as belonging to a thing which had or has its being there."[27] This Mr. Murphy thinks "a very Whiteheadean development," by which he appears to mean that it implies that "the same particular can be in two places at once." He proceeds: "The nature which belongs to [characterizes] one region of existence can not possibly be beheld as having its existence in another region and belonging to a thing which has its being there, for it has already acquired the temporality and location of the first region of existence." From this Mr. Murphy concludes that while "the orthodox dualist may thus indulge in myths as to what transitive knowledge would be like if there were any, he can not ever believe them."[28] A more complete misunderstanding both of the passage to which the comment refers and of the nature of the epistemological problem would be hard to imagine. The comment in the first place is based upon a quotation which omits an essential word. I did not assert that *A* is literally "beheld as having its existence" in the region *B*; I asserted that it is beheld "as if" existing in that region. Two letters here make a scarcely negligible difference in the logical import of the proposition. I had supposed that I had said with tedious iteration and perhaps superfluous emphasis that it is the "*vicarious* presence" of *A* in the region of *B* (i.e., that of the experiential datum) that is necessary for knowledge (in the second sense of "knowledge");[29] but it seems that I did not say it often enough or emphatically enough to convey the distinction to Mr. Murphy. Again the passage in question neither said nor implied that "the same particular" is "in two places at once"; on the contrary it formally denied this. Such denial is manifestly of the essence of any representative theory. The datum, being a symbol or sign of the not-present object, is, according to such a theory, not the same existent as that of which it is the sign. If it were the same there would obviously be no "representation"; the *cognoscendum* would *be* the datum—and error would accordingly be inconceivable.

More serious than this reversal of my meaning is the failure to grasp what the epistemological problem is and out of what situation in experience it arises. This failure is apparently due to the primary confusion of two senses of "knowing," already pointed out. If there is knowledge, *not* solely of "data as such and in their imme-

[27] *LC*, p. 70. See *RD*, p. 321, quoted in *LC*, p. 69.

[28] *LC*, p. 70.

[29] E.g., *RD*, pp. 312, 313, 319, and Chapter IX in general.

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diate being," but of existents external to the limited and transitory cognitive event in which they are known—for example, if I can be said to know to-day an event of yesterday, or to know something of another man's life without living it—then the present content of *my* experience, if it is a particular, plainly does have its being in one "region of existence" and the thing known in another. I can not suppose that Mr. Murphy seriously means to deny this. If it is admitted, the real problem of knowledge is therewith presented: *how* does the occurrence in a given experience of one particular existent, viz., a datum, constitute a knowing of another particular and not-then-experienced existent—which at the moment of knowing may be in fact a non-existent, i.e., a past or future state of things? How, in Professor Dewey's apt phrase, are things "present as absent"? It is true that others as well as Mr. Murphy have failed to see or have in various ways evaded this problem. There have been in recent philosophy, so far as I can recall, only two serious attempts to deal with it. One of them is the thesis of some critical realists, of some "new" realists, and of Professor Whitehead in certain passages, that the datum is *not* a particular existent, but an essence or "eternal object," which is the same, quâ essence, in the datum and the thing known, yet is not in two places or two times at once, simply because it is in neither case in any place or any time. This solution I am unable to adopt, for reasons set forth at length in *RD.;* and these reasons seem to be expressly accepted as valid by Mr. Murphy, in the comment here under consideration. The other way is that of a genuine epistemological dualism, to the better understanding of the meaning of which I attempted to contribute in the final chapter of *RD.* An image or other datum in my present cognitive experience can refer to an object, event, or fact not now being immediately experienced by me, simply because the observable nature of *cognitive* experience consists, not in the bare presence of a datum, but also in the presence to consciousness of a schema of relations of mutual existential externality—in the phraseology of the myth, "an image of the Whole"—within which schema the present and private cognitive experience itself, with the immediate data it includes, is apprehended as having a locus external to that of the *cognoscendum,* but at the same time as having some character (which *may* be a highly abstract one) identical with a character believed to belong to the not-experienced *cognoscendum* in its own conceived region of being. This is, I have suggested, what every one of us manifestly does whenever, for example, he experiences an image and calls it a memory image—i.e., an image of an event not occurring simultaneously with the presence of the image in experience. The temporal schema, however, is not the only mode in which the refer-

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ence of a character of a datum to a region of existence which is not that of the datum takes place; but I shall not further elaborate the point in this paper. I am here, perhaps, wasting printer's ink by resaying what has already, in substance, been said in the concluding part of *RD*. I have been led to do so because Mr. Murphy seems to me to have comprehended neither the nature and inevitability of the problem with which I was there dealing nor the nature of the answer which I proposed. When both are clearly understood it will become plain, I think, that any account of knowledge transcending the immediately given *must* be a representative theory, and also how knowing by means of representative ideas takes place.

But when neither is understood, it is perhaps not surprising that the possibility of "transitive knowledge" should be denied—as it expressly is by Mr. Murphy in the passage last cited.[30] Yet to deny "transitive knowledge" is to deny knowledge in the second sense altogether, and to limit every knowing to the private datum. And it *is* to me somewhat surprising that the formal assertions that "knowledge somehow reveals external objects" which are not constituted by "the contents of experience," that there is "a distinction between the immediate being of experienced events and their representative function," and that the data of cognition "are not the objects which our knowledge claims to be about"[31]—that these assertions should so speedily be followed by the declaration that "transitive" and "representative" knowledge is inconceivable.

Mr. Murphy, then—and not he alone—must face the unescapable dilemma. Indirect knowing—knowing of existences which when known are not immediate data—is either possible or impossible. If it is admitted (as by Mr. Murphy) to be possible, it is inadmissible to use arguments which presuppose its impossibility. Between epistemological monism and epistemological dualism there is no logical *via media,* however pleasant it might be to find one. Among the Bad Dualisms is certainly, I think, that which consists in affirming epistemological dualism in principle while rejecting its plain implications—or, as some would doubtless prefer to say, repudiating its liabilities. And in time of revolution the most insecure of all positions, it is to be feared, is that of those who endeavor to be both revolutionists and counter-revolutionists at once.[32]

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[30] *LC*, p. 70.
[31] *LC*, p. 31.
[32] To be continued in next issue, No. 14.

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# A SPINOZISTIC FANCY

SPINOZA'S doctrine of the infinity of attributes has always tended to bring a blush, apologetic or out-and-out condemnatory, to the cheeks of his commentators. His enemies find in it added evidence of the questionableness of his philosophy, and most of his friends regard it as an indiscretion, embarrassing to them, and not altogether creditable to him. They had rather he had kept it to himself, or not involved them in the ungrateful task of explaining it away. But there are a few who take this doctrine seriously, and feel that he really said what he meant, and meant what he said. Among the latter is Mr. Hallett, who has just published a learned, profound, and brilliant book [1] on Spinoza, which is a notable contribution to both Spinozistic and neo-realistic literature.

For Mr. Hallett the infinity of attributes forms an integral and important part of Spinoza's system. Any limitation of attributes within Substance would, he tells us, "not only curtail the absolute perfection, of Substance," but would dissipate its unity, since the independent reality of each attribute as expressing in its own way the *whole* nature of Substance, which is infinite in its wholeness, demands reflection in infinitely many attributes. No attribute could adequately express the infinite nature of Substance, if it reflected merely *some* other or others, or if there were only *some* others for it to reflect. Again, were there only two, he continues, Spinoza might seem dangerously inclined to idealism (which he is not), since thought might then be regarded as essentially of extension, and extension as solely the object of thought. But, since extension must stand in the same relation to the infinity of other attributes as it does to thought, it can not be monopolized by thought. They, too, have a claim upon it, which is neither prior nor posterior to that of thought, and their lien, by preventing foreclosure by any one or any number of attributes short of the infinite whole, helps maintain it in independent existence. So, too, their mortgage upon thought keeps that attribute from being taken over by extension and reduced to physical terms. That thought is aware of none of the other attributes except extension is, according to Mr. Hallett, merely an extension of its failure in partial, clouded, and inadequate minds like ours, to understand completely the true inwardness both of extension and of itself. Ignorance in this respect is merely part of our general ignorance, and complete understanding of Reality on our part would not only correct our perspective within its present limitations to thought and extension, but would also bring all the other attributes into focus within that perspective. It is, says Mr. Hallett, just the dim reflections of the other un-

[1] *Aeternitas.* The Oxford Press, 1931.

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known attributes in knowledge that renders the process of cognition opaque and mysterious to us, even when the object of cognition is clearly and correctly apprehended.

Now, it is the object of this paper to ask whether, granting the existence of an infinity of attributes, we have only the negative indications of their presence to which Mr. Hallett refers. Upon examination it might appear that both thought and extension exhibit curious positive symptoms which nothing in their own nature explains. Thought, for instance, has one very odd and perplexing trick. It is infinitely self-repetitive. Like Tennyson's brook, it goes on forever, babbling its ability to know, "I know; I know that I know; I know that I know that I know; I know that I know that I know that I know," and so on *ad infinitum*. Surely, we might expect, so long a wind and so dogged a persistence ought to get thought somewhere and meet with some reward in an ever increasing richness of its knowledge. But curiously enough, they do not, at least so far as the attributes of thought and extension are concerned.

For, only the first two "I knows" are fruitful and significant. The first establishes the fact of consciousness, the second, of self-consciousness. Or, to put it in Spinozistic terms the one constitutes the idea of the body, which registers in the attribute of thought the modifications undergone by its particular correlated mode of extension; the other, the "I know that I know," constitutes the "idea of the idea of the body," or fact that it is of the nature of the mind not only to reflect the modifications of the body in a correlated set of mental modifications, but to reflect upon these modifications of its own as well. And when we have said "I know that I know," we have completely and adequately expressed the essence of the attribute of thought as the self-conscious correlate of extension. We know all that we know or need to know—for that is all there is to know—about the nature of knowledge.

The twice-told tale is enough, then. Its repetition to infinity is supernumerary and sterile—mere empty chatter like the telling over and over again of the same story by an old wife in her dotage. It adds nothing to thought's correlation with extension or to its insight into itself. It would seem, rather, a habit without rhyme or reason so far as the two attributes are concerned—a sheer nervous restlessness, explicable, if at all, not as a normal activity of mind, but as an overstimulation of that activity excited by and correlated with something beyond both the spatial and the mental aspects of Reality. Suppose, however, that there really are infinite other attributes. In that case may we not argue that this incessant twitching of the mind's eyes, this infinite repetition of the "I know," is perhaps just a sign of the correlation of thought with these attributes? They can not, to be sure, make themselves understood, but

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their existence nevertheless arouses in our thinking a vague and endless uneasiness. Haunted by them, thought can not rest, but must reiterate itself *ad infinitum,* in registration of the infinity of their number. But since they are beyond the ken of our minds, this reiteration is mechanical and empty, presenting thought with no new object and adding not one whit to its essence and perfection.

Again, in extension, also, may we not find a similar indication of the impalpable but none the less disturbing presence of an infinity of attributes? Space, like thought, goes on and on forever. And just as the content and meaning of thinking is not expanded or enriched by the process of infinite self-repetition, so the essential characteristics of extension gain nothing because of its infinity. Its whole nature is perfectly given in any finite portion of it. Our voyages in it reveal no new truths regarding it. We drop below each fresh horizon only to find a repetition of the old; just as at sea, hours, days, and even weeks will disclose merely more, but not a different water. A half hour out of port may suffice to show us all that an ocean can be or do.

The endlessness of extension, then,—its invitation to keep on going *ad infinitum*—is just as superfluous to a revelation of its character as is the infinite self-repetition of mental activity to an expression of the nature of mind. Its perpetual stretching and yawning may be taken rather as a sign of the same nervousness that keeps thought twitching, and may be laid to the same cause. Space, too, is bothered by its correlation with the infinite other attributes. Unable to respond to them and to mirror them adequately, it can recognize and register them only by repeating itself, as thought does, beyond necessity and *ad infinitum.*

It may be argued indeed, that there are good reasons for supposing extension not to be infinite, but finite and spherical, or it may be, even contracting or expanding. But such an argument is irrelevant to our discussion, which for its own purposes has granted the Spinozistic assertion that the attributes are infinite. Moreover, even accepting the argument, might we not still maintain of any *size* of space all that we have said of its infinity? A smaller or a bigger amount of extension, a lower or a higher degree of expansion or contraction would suffice adequately to express its nature. In that case, to adopt the term from Plato, "the-great-and-the-small" aspect of space might be substituted for its infinity as indicative of its correlation with an infinity of attributes.

Finally, to give our fancy free rein, we may ask whether we are even restricted to such vaguely positive indications of the other attributes as the infinitely self-repetitive character of extension and thought. Have we not a door at least ajar, if not entirely open, upon one of them at any rate? What of mystical experience? Here we

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have something that certainly attempts to transcend not only the entire space-time aspect of the Real, but the whole attribute of thought as well. The mystical object, we are told, can be neither perceived by the senses nor conceived by the mind. No modification of either of the two attributes is like it. It lies beyond the body and the idea of the body, and escapes even such ultimate categories as essence and existence. Nay more, contact with it obliterates the distinction between subject and object and thus carries us beyond the "idea of the idea of the body." It can be talked of only negatively.

The mystic state, then, if we take it seriously, would seem to indicate an escape, or at any rate an attempt to escape, from the attributes of thought and extension, and a contact of some sort with another dimension of Reality. And once more, if the two known attributes do exhaust the substance of the Real, the mystical impulse becomes as irrational as their self-repetition. It has no adequate basis in either of them, if they are all that there is to the universe, and its aspiration is meaningless. But as a disturbance of body and mind by other attributes, and as a response and a reaching out to their presence, it may have significance, and the self-fulfilment it pretends to attain may be more than illusion.

The mystic will, of course, assert that his contact is not with an attribute, but with Substance itself. He has, he believes, penetrated and been made one with the essence of the Real. But the materialists are as convinced that the attribute of extension reveals the true nature of Substance, and the idealists are even surer that all things may be reduced to terms of thought. For that matter, the latter number some who even believe that in feeling the particular warmth and beat of their own peculiar modifications of the attribute of thought they are taking the pulse and the temperature of God himself. The mystic claim to be in touch with the Absolute is perhaps neither more nor less probable than any of these other pretensions.

It will be understood, I hope, that in what I have said I hold no brief for the infinite attributes, or even for the Spinozistic system as a whole, magnificent though I consider that system to be. I have simply wished to point out that the convinced follower of Spinoza in defending the doctrine of an infinity of attributes is not obliged to fall back on *a priori* and transcendental arguments. He may rather, if he likes, appeal to the known attributes and infer his conclusion from otherwise irrational perturbations in their behavior, just as the astronomer infers from disturbances in the orbits of familiar planets the existence of others undiscovered and, it may be, undiscoverable.

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# BOOK REVIEWS

*Bayle the Sceptic.* HOWARD ROBINSON. New York: Columbia University Press. 1931. vii + 334 pp.

To our gallery of full-length portraits in English of the more influential French thinkers, which is filling gradually as the years go by, Professor Robinson has made a noteworthy addition in this scholarly life and works of Pierre Bayle. That able seventeenth-century forerunner of the *philosophes* has been overshadowed, as he avers, by "the brilliant work of those who followed in a way which he had made usable." As a result the present work has inevitably, as one of its aims, the remedying of our modern "ingratitude" toward one of the most modest of the liberators.

Bayle has long been vaguely known to many readers of English as a Protestant Frenchman of the age of Louis XIV, who lived in exile in Holland and compiled a dictionary full of sly heresies and veiled obscenities, inspired no doubt by a cautious atheism underneath. Professor Robinson replaces this sketchy caricature with a full-bodied and versatile, if not a commanding or aggressive figure, seen against the background of his century's violence: Bayle the pioneer journalist, "the universal reporter of Europe," the teacher amid the "professorial snarlings" of a "dusty college," the hard-working encyclopedist, the philosopher of history, the biblical critic, the gadfly of the Jesuits, and the champion of an unprecedented degree of toleration. Although always primarily "a spectator of life," from his first *Miscellaneous Thoughts on the Comet of 1680* to his last *Reply to the Inquiries of a Country Gentleman* in 1704–07, Bayle displayed a mind alert to expose the foibles of a credulous age, and a pen superbly capable of making innuendo do the work of positive assertion. For the rules of theological controversy in Bayle's time did not permit a writer to say with impunity, even in relatively tolerant Rotterdam, that which might lead directly to what was known as "indifference in religion." Yet Bayle, by his unparalleled journalistic ability "to please and instruct at the same time," managed to publish, at the cost of some persecution but without bodily harm to himself, an astonishing number of apparently innocent treatises from which, by a logical mind, only the most shocking conclusions could possibly be deduced. His method was seldom that of frontal attack; it was usually the playing-off of one dogmatism against another, with both author and reader in the position of impartial judge. As Gibbon expresses it: "He balances the false religions in his sceptical scales, till the opposite quantities annihilate each other."

That Bayle, with all his critical acumen and his consuming in-

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terest in the presentation of unorthodox ideas, was not "a philosopher in the technical sense," Professor Robinson specifically declares. "His works should be approached as one would approach the writings of a Plutarch, a Jerome, a Lucian, a Seneca, or an Erasmus. Philosophical problems were important to him, it is true, but he was particularly a 'practical' philosopher, attracted by the relationships of philosophy and religion and morals as they revealed their outworkings in human experience. . . . The search for truth made him very sceptical of the certainties he found everywhere, and it led him to shatter many a stronghold."

One might go further than this and challenge Bayle's right to the title of sceptic in the philosophical, rather than in the popular sense. Of course he doubted most of the accepted religious tenets of his age, skilfully laying bare their weaknesses by the use of rationalistic weapons which were, as the author contends, to supply a veritable arsenal for his successors of the *Aufklärung,* such as Voltaire, Diderot, Gibbon, and Frederick the Great. But there is discernible in Bayle no trace of that deep distrust of reason itself, or indeed of all the ways of knowing, which marks the philosophical sceptic as against the mere rejecter of specific doctrines. Bayle deals with the surface issues of ecclesiastical authority and "sufficient evidence," but unlike John Locke, his great contemporary, he never adumbrates the more fundamental problem of knowledge. So in spite of the author's assurances that Bayle was "sceptical" of this and that,—of histories, of women, of miracles, and of many of his fellow men; in the ancient philosophical tradition of epistemological scepticism he has no rightful place. That is why the title *Bayle the Sceptic* is likely to arouse in the mind of the technical philosopher anticipations which are doomed to disappointment. Of course "one can not be certain" about Bayle's own convictions, but he seems to have been a sort of fluctuating pioneer deist with no scruples against appearing to submit to the authority of the Bible and the Reformed Church. If Bayle was a sceptic, so were and are hundreds of other more-or-less outspoken free-thinkers who have refused to accept most of the truth-claims advanced by their more gullible contemporaries, quite without questioning or abandoning many positive and enlightened notions of their own.

This does not mean that Professor Robinson has not performed a worth-while task so thoroughly that it will hardly need revision for many years to come, for he has. He deserves high praise for making accessible with such exactitude and completeness a great deal of valuable information concerning Bayle and the history of ideas in Europe during the seventeenth and eighteenth centuries. Those who rejoice in the modern secularization of thought owe a

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large debt of gratitude to Pierre Bayle, who did much to make the world safer for philosophers; and they would do well to become better acquainted with him. Occasionally the author prints without the needed critical *granum salis* some of the less restrained eulogies of Bayle and his influence, but that is natural in a work designed to rescue an author from undeserved neglect. To expect any ordinary biographer to pit his style against that of his subject is probably demanding too much; certainly in this case the quotations from Bayle are hardly matched in brilliance by the writing which surrounds them. An excess of exclamation-points, and of colloquialisms which have to be apologized for by the use of quotation-marks, such as "shady," "soured," and "get by," seems out of place in a volume of this character. One suspects that the key to these minor defects lies in the exhortation to the reader (in the Foreword) "to think of this study, not as a learned dissertation, but a vital portrait of one of the most fascinating and powerful of the moderns," when underneath all this publisher's-blurb language the stigmata of the doctoral thesis are only too evident. There is both a valuable bibliography and an excellent index.

HAROLD A. LARRABEE.

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*Hegel's Phenomenology of Mind.* Translated, with an introduction and notes by J. B. BAILLIE. Revised second edition. (The Library of Philosophy.) New York: Macmillan Co. 1931. 814 pp.

Hegel's *Phenomenology* is probably the most difficult book in the history of modern philosophy. Yet no one can read it without sensing a wealth of profound suggestion which just escapes conversion into clear, shining truths. Its obscurity is partly responsible for the fact that until the present century it was practically ignored by Hegel's critics, thus strengthening the impression that Hegel's system can be unqualifiedly characterized as panlogism. But the *Phenomenology* can not fit into such a simple scheme. For it contains an account not only of the forms of cognitive experience, but also of their affective and volitional contexts. The manner in which these aspects of experience interact and develop is traced not only in the relationship between the individual self and the external world, but in the relation between self and community, the community and culture, the succession of cultures, and the history of civilization. The introduction of arbitrarily illustrated material from history and literature is very puzzling unless one sees that according to Hegel's organic method a complete analysis of even the simplest processes of human consciousness demands a consideration of the social and cultural whole (Hegel ex-

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tends this to include the Absolute whole) in which finite conscious processes go on. Hegel was probably the first thinker to maintain that even sense-perception—not merely the contents of perception but the way of perceiving and the meanings disclosed in the act of perceiving—was as much a cultural phenomenon as a psychological one. Properly conceived, Reason and all the domains of objective mind are just as much interpretable socially, as, conversely, social phenomena are interpretable as an expression of reason.

It is true that for Hegel ultimately the only thing genuinely real is Absolute Thought or "Spirit knowing itself as Spirit." As such it differs from thought which is not absolute in that it contains within itself, as its own differentiation, all forms of existence and experience. Hegel fails completely however to indicate how this is possible or to make the structure of the Absolute analytically intelligible. The argument is at best analogical. On the basis of the fact that non-cognitive experience acquires a wider significance, and sometimes becomes qualitatively different because of the transmutative effects of cognitive activity, Hegel assumes that the character of cognitive experience itself undergoes qualitative and structural change as thought moves from the finite level of experience to the infinite. On the infinite plane "the specific determinateness of each [meaning] is just as much its opposite; unity in otherness—spiritual reality—is achieved." In the realm of "spiritual reality" all the living variety of nature and experience is contained implicitly; it becomes the task of logic to recover the riches hidden in the Absolute Mind. It is at this point that the *Logic* begins. One feels that even in terms of Hegel's own system (as in that of his great spiritual predecessor, Plotinos) it is easier to get up to God (or the One) on the ladder of nature than to climb down again.

The present translation of the *Phenomenology* by J. B. Baillie, the solid and faithful Hegel scholar, is a revised second edition of his translation of twenty years ago. It is a tribute not only to his piety, but to the sympathetic intelligence with which he has wrestled with Hegel's meanings. The translator's introduction, however, will not be very intelligible to those who are not already acquainted with Hegel's philosophy. In critical places of the exposition Baillie falls into a free paraphrase of Hegel's technical jargon. The deplorable tendency to expound Hegel in Hegelian terms (of which G. Lasson is occasionally guilty in his valuable prefaces to the revised edition of Hegel's works) has brought a gentle rebuke from a German critic which is worth quoting. "Hegel," he says, "ist an sich schon geheimnisvoll genug, um es seinen Auslegern zu ersparen, dass sie selbst wieder geheimnisvoll von ihm reden."

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*The Ethical Religion of Zoroaster.* MILES MENANDER DAWSON. New York: The Macmillan Company. 1931. Pp. xxviii + 271.

The beginning student of the history of religions will be grateful for this volume of carefully chosen passages from the Zoroastrian scriptures. Following a brief introduction and biographical sketch of Zoroaster and a bibliography of the scriptures, the author stimulates the reader's interest with a list of Parallels of Zoroastrian with Jewish and Christian Sayings. Then, in thirty-three chapters, he presents what he judges to be the meat and substance of the Mazdean religion. While the theology and cosmology of Zoroastrianism receive due attention, the main body of the book is devoted to its ethical teachings. Thus the religion which set out from the moral antithesis of good and evil and, never abandoning it, proceeded to cosmological dualism, is here revealed in its program of directing human life and ordering it in all details. Several chapter-titles will suggest the scope of this material: The Liar is the Direst Enemy—To Do Good against to Do Ill—Rights of Fellow Men—of Ordinary Men—of Infidel Foes—of the Sexes—of the Land—of the Herd—of the Dog—Earthly Rewards and Punishments—Heaven, Hell, Purgatory and the Way Out—the Spiritual Universe, Now and Ever. By bringing together passages from the various scriptures to bear on the same moral problem, Dr. Dawson has secured cumulative gain in effectiveness and systematic elucidation. The beginner gains a clearer sense of the Zoroastrian gospel in detail, one passage often helping to explain another. The explanatory thread of argument on which the beads of quotations are strung is as a rule slender, but not thin: the author's main purpose is to make the scriptures speak for themselves. While there are, of course, extensive expositions of Zoroastrianism, one does not recall another English work that so conveniently brings before the reader the Zoroastrian teachings in systematic order and in the scriptural wording. This volume should thus prove valuable to college and church classes in the history and philosophy of religion, and also to students of the evolution of morals and to the general reader.

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## JOURNALS AND NEW BOOKS

REVUE NEO-SCOLASTIQUE DE PHILOSOPHIE. XXIVe Année, No. 34. De la notion de philosophie chrétienne: *J. Maritain.* La structure metaphysique de l'être fini: *L. De Raeymaeker.* Le syllogisme chez Platon (*suite et fin*): *E. de Strycker.* Glose sur un passage du *De Anima*: *M. De Corte.* Où naquit Francisco de Vitoria?: *Bruno de S. Joseph.* Travaux récents de philosophie morale: *P. Harmignie.*

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University of California Publications in Philosophy, Volume 15: Causality. (Lectures delivered before the Philosophical Union, University of California, 1932.) Berkeley: University of California Press. 1932. 231 pp.

Hsü, Leonard Shihlien: The Political Philosophy of Confucianism. An Interpretation of the Social and Political Ideas of Confucius, his Forerunners, and his early Disciples. New York: E. P. Dutton & Co. 1932. xxii + 258 pp. $3.75.

Kraft, Julius: Von Husserl zu Heidegger. Kritik der phänomenologischen Philosophie. Leipzig: Hans Burke. 1932. 124 s. 5.40 M.

Morris, Charles W.: Six Theories of Mind. Chicago: University of Chicago Press. 1932. xi + 337 pp. $4.00.

Schiebold, Rolf: Menschen und Gesetze. Deutsche Menschen deutsche Gesetze. Entwurf einer deutschen Reichsverfassung. Altenburg, Thüringen: Theodor Körner. 1932. xix + 96 pp. + 31 Aufrissen.

Richardson, Edward Elliott: Organic Idealism. (The Society for Philosophical Inquiry of Washington, D. C. Publications.) 33 pp.

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## NOTES AND NEWS

The Tenth International Congress of Psychology will be held in Copenhagen August 22–27, 1932. For information, address Professor Edgar Rubin, Studiestraede 6, Copenhagen, Denmark.

The Academy of Letters of Heidelberg is undertaking a critical edition of the works of Nicholas of Cusa, *Nicolai de Cusa opera omnia*, which will be published by Felix Meiner, Leipzig. The pagination of the Paris edition will be indicated in the margin. It will probably require fourteen volumes for the philosophical and political writings which will appear under the general title of *Nicolai de Cusa opera philosophica*, and they will be published from 1932 to 1939, the first volume, *De docta ignorantia libri tres*, appearing this year. Subscriptions for the fourteen volumes will cost approximately 300 marks (1,600 pages).

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The Metaphysics of Space and Time. V. F. LENZEN.
Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 8. April 14, 1932.**

Some Metaphysical Implications of the Pragmatic Theory of Knowledge. THEODORE T. LAFFERTY.
Some Early Holistic Psychologists. W. D. COMMINS.
Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 9. April 28, 1932.**

On Persuasion. RAPHAEL DEMOS.
Logic and Superstition. J. R. KANTOR.
Superstition and Logic. WENDELL T. BUSH.
The Final Solution of Zeno's Paradox of the Race. A. USHENKO.
Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 10. May 12, 1932.**

The Displacement of the Sense-Datum. D. S. MACKAY.
On the Instrumental Analysis of Thought. CARLOS KLING.
Epistemology and Symbolism. M. WHITCOMB HESS.
Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 11. May 26, 1932.**

The Prestige of the Infinite. GEORGE SANTAYANA.
Report of the Thirty-Third Annual Meeting of the Western Division of the American Philosophical Association.
A. CORNELIUS BENJAMIN.
Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 12. June 9, 1932.**

Substances, Events, and Facts. L. SUSAN STEBBING.
A Critical Analysis of the Concept of Introspection.
MARTEN TEN HOOR.
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# EVOLUTION AND RELIGION

*By*

JOHN A. O'BRIEN

*Professor in Newman Foundation*
*University of Illinois*

This is probably the first book by a Catholic author who frankly accepts the evolutionary viewpoint as establilshed by scientific generalization and attempts to interpret the bearing of this viewpoint upon the Christian religion. The fundamental purpose of the study is to show that instead of regarding evolution as a destructive enemy of the Christian faith, churchmen of every faith might better regard it as an ally that greatly strengthens the idea of purpose in the universe and reinforces the belief in a supreme intelligence manifesting itself through the orderly processes of nature and in the development of all forms of life. The book is wholly non-controversial in purpose and method. It makes no attempt to prove whether the theory of evolution is true or false. Accepting evolution as a tentative scientific hypothesis, it seeks to determine whether such a concept conflicts with the idea of God in general or with Christianity in particular. The book outlines the history of the development of the theory of evolution, discusses the question of mechanism and natural selection as opposed to purpose; interprets the philosophical significance of adaptation to environment; and sketches the bearing of uniformity of natural law upon the idea of the divine administration of the cosmos.

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Vol. XXIX, No. 14. July 7, 1932

# The Journal of Philosophy

## PHYSICS AND METAPHYSICS[1]

THE change that has come about in the spirit of physics is a matter of general knowledge, but the implications of this change are not so well known. The change itself can be summarily stated in the proposition that billiard balls have been replaced by differential equations, matrices, probability equations, tensors, and whatever else mathematical genius has devised and physical genius can utilize. Perhaps the most picturesque account of the subject-matter of modern physics has been given by Eddington in the oft-quoted passage in which he tells us what physics does with the problem of an elephant sliding down a grassy hillside. "The experienced candidate knows that he need not pay much attention to this; it is only put in to give an impression of realism. He reads on: 'The mass of the elephant is two tons.' Now we are getting down to business; the elephant fades out of the problem and a mass of two tons takes its place. . . . Never mind what two tons *refers* to; what *is* it? How has it actually entered in so definite a way into our experience? Two tons *is* the reading of the pointer when the elephant was placed on the weighing machine. Let us pass on. 'The slope of the hill is 60°.' Now the hillside fades out of the problem, and an angle of 60° takes its place. What is 60°? There is no need to struggle with mystical conceptions of direction; 60° *is* the reading of a plumb-line against the divisions of a protractor. Similarly for the other data of the problem. . . . And so we see that the poetry fades out of the problem, and by the time the serious application of exact science begins we are left with only pointer readings. If then only pointer readings or their equivalents are put into the machine of scientific calculation, how can we grind out anything but pointer readings? But that is just what we do grind out. . . . The triumph of exact science in the foregoing problem consisted in establishing a numerical connection between the pointer reading of the weighing-machine in one experiment on the elephant and the pointer reading of the watch in another. . . . The whole subject-matter of exact science consists of pointer readings and similar indications" (*The Nature of the Physical World*, pp. 251–252).

[1] A paper read at a meeting of the Western Division of the American Philosophical Association at Ann Arbor, March 25, 1932.



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Professor Lenzen in his book, *The Nature of Physical Theory*,[2] tells the same story. "In traditional physics," he informs us, "a physical quantity is a **particular** which has a magnitude to which a number can be assigned. . . . In contemporary physics it is coming to be recognized that the essential thing is the number assigned to the magnitude. In practice we replace the concept of magnitude by that of number; thus when we use $v = s/t$ we substitute numbers. . . . According to the present formulation the laws of physics are expressed by functional relations between the variable physical quantities (numbers)" (pp. 29–30). "The results are implications between these functional relations and others" (p. 40). "Nothing is said [in mathematical physics] about the assignment of numbers" (p. 42). Once the assignment of numbers is made by the experimental physicist in the laboratory and these numbers are handed over to the mathematical physicist, the latter proceeds to deal with these numbers as *numbers,* using whatever mathematical devices are at his disposal in manipulating them. There is only one restriction placed upon him in his use of mathematics. The mathematical operations he uses must result in *conclusions that may be interpreted back into laboratory terminology* and thus be subject to the experimental confirmation. As Eddington puts it, the laws of physics "permit us to deduce the readings of other indicators from the reading of one. *It is this connectivity of pointer readings, expressed by physical laws, which supplies the continuous background that any realistic problem demands*" (p. 255). Thus speaks the mathematical physicist.

When, on the other hand, Bridgman in *The Logic of Modern Physics* (*passim*) insists that the concepts of physics are operational concepts he speaks as an experimental physicist. Unless a concept defines a way of operating in a laboratory, the experimentalist can do nothing with it. The concept must indicate a way of *assigning* numbers in his operations with his instruments. The Alpha and Omega of physics are printed on the calibrated apparatus that can be manipulated by the research-worker in the laboratory; the remaining letters of the physical alphabet from Beta to Psi inclusive are printed only on the pages of the pure mathematician. The careful physicist, whether he be of the experimental or of the mathematical fraternity, knows that all the letters of the physical alphabet

[2] New York, John Wiley & Sons, Inc.; London, Chapman & Hall, Ltd., 1931. This excellent work is the most consistent presentation that I know of the fact that mathematical physics deals only with "functional relations between variables" and "the mathematical implications between these functional relations and others," the values of the functions being given by the experimentalist in his assignment of numbers in experiment (p. 40). Professor Lenzen's article, "The Metaphysics of Space and Time" (this JOURNAL, Vol. XXIX, 1932, pp. 182–187), is also very much to the point.

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do not lie in the same plane. The plane of physical manipulation is different from that of mathematical manipulation, the planes intersecting in the numbers got by laboratory measurement; and the woes of the philosopher begin when he attempts to reduce all physical concepts to one plane; to be more specific they begin when he attempts to give the same kind of meaning or existential status to an electron or to the quantum $h$ as to a lump of lead.

That he has some excuse for doing this is unquestionable. For the mathematical physicist is not always careful. Thus even Eddington begins his book on *The Nature of the Physical World* with the picturesque statement: "I have settled down to the task of writing these lectures and have drawn up my chairs to my two tables. Two tables! Yes; there are duplicates of every object about me—two tables, two chairs, two pens. . . . whenever I begin to scratch the first thing I strike is—my two tables. One of them has been familiar to me from earliest years. . . . It has extension; it is comparatively permanent; it is coloured; above all it is *substantial*. . . . Table No. 2 is my scientific table. . . . My scientific table is mostly emptiness. Sparsely scattered in that emptiness are numerous electric charges rushing about with great speed; but their combined bulk amounts to less than a billionth of the bulk of the table itself. Notwithstanding its strange construction it turns out to be an entirely efficient table. It supports my writing paper as satisfactorily as table No. 1; for when I lay the paper on it the little electric particles with their headlong speed keep on hitting the underside, so that the paper is maintained in shuttle-cock fashion at a nearly steady level . . ." (pp. ix–x). "I need not tell you that modern physics has by delicate test and remorseless logic assured me that my second scientific table is the only one which is really there—wherever 'there' may be. On the other hand I need not tell you that modern physics will never succeed in exorcising that first table—strange compound of external nature, mental imagery and inherited prejudice—which lies visible to my eyes and tangible to my grasp . . . no doubt they [the two worlds] are ultimately to be identified after some fashion. But the process by which the external world of physics is transformed into a world of familiar acquaintance in human consciousness is outside the scope of physics. . . . Provisionally, therefore, we regard the table which is the subject of physical research as altogether separate from the familiar table, without prejudging the question of their ultimate identification. It is true that the whole scientific inquiry starts from the familiar world and in the end it must return to the familiar world; but the part of the journey over which the physicist has charge is in foreign territory" (pp. xii-xiii).

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"Foreign territory" indeed; but if so, how can the scientific table support my familiar writing paper which I lay on it? When one speaks in this fashion, the foreign territory has been annexed by a thoroughly unjustified imperialistic policy. The scientific table, which is only a set of mathematical expressions, has been made into a thing lying in the same world as the familiar table and the familiar paper; it underlies the paper, else it could not keep on hitting the under side of the sheet. When it is said that the process by which the one world is transformed into the other lies beyond the scope of physics it is forgotten that the scientific world is a set of mathematical functions which physics, we are told, explicitly recognizes for what they are, and the "transformation" of the scientific world into the familiar world is not transformation in its mathematical sense, but in a metaphysically existential sense. By some sort of miracle a process of transubstantiation is achieved; a mathematical formula becomes a thing that "hits on the underside" of a sensible fact, thereby supporting that fact from sensibly falling. It is such careless talk on the part of the physicists that has led the metaphysician into confusion and despair—or into what is worse, into dogmatism. This dogmatism is illustrated in Russell's assertion that "the physical brain" is in "physical space," and therein spatially contains "all perceptual space" with all its perceptual contents; these perceptual contents thus become parts or characters of the physical electrons in the physical brain.

This way of dealing with the relation between the formulae of mathematical physics and the factual metrical findings of the experimental physicist comes about by reason of a previous unconscious transubstantiation of mathematical expressions; once transubstantiated, they have to be again transubstantiated into familiar facts of everyday life. *Green Pastures* has familiarized us with the thought that one can not "throw a miracle" and let it go at that. One good miracle deserves another. But two miracles that cancel each other do not thereby recommend themselves to reason as being non-miraculous.

The way to avoid the necessity of positing a miracle here is to keep constantly in mind the process by which mathematical equations enter into physical discourse. Lenzen describes the process by referring to the famous experiment of rolling a ball down an inclined groove. "A standard meter rod is placed along the groove so that one end of the rod coincides with the top of the groove, to which the coordinate 0 is assigned, the point of the groove which coincides with the other end of the rod being given the coordinate 1. It is not necessary to describe further the construction of the coordinate system. There is also a clock which ticks the seconds.

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. . . We place the ball at the top of the groove, which has the coordinate 0, and release the ball upon hearing a tick of the clock, which we shall label 0. Thus the coincidence of the ball and the point marked 0 is simultaneous with the tick of the clock. This space-time coincidence is a datum. . . . The ball rolls down the incline and at the second tick of the clock we observe that the ball coincides with the point marked 1. . . . At the third tick one observes that the ball coincides with the point marked 4, etc." Calling the distance travelled by the ball $s$, and the time in seconds $t$, one "discovers that the numbers satisfy the relation $s = \frac{1}{2}gt^2$ where $g$ is a constant." This relation "is a datum for mathematical physics. A result of mathematical physics is: If

$$s = \tfrac{1}{2}gt^2,$$

then

$$\frac{d^2s}{dt^2} = g.$$

Nothing is said about the assignment of numbers" (pp. 40–42).

This is perhaps one of the simplest experiments that can be performed in a laboratory. Note that we have an expression $t^2$ in the first equation. What is $t^2$? It is obvious that unless $t$ is a "pure number" $t$ here has no meaning. "Time" in any other sense than that of a number can not be squared. When the experimenter writes down the equation $s = \frac{1}{2}gt^2$, he is not describing a relation between "the square of time" and distance in any other sense than as a relation between *numbers*. Again, there is here a mathematical process of differentiation whose result is expressed in the second equation. No one is likely to be so metaphysical in his interpretation of this process as to say that it is a process that occurs anywhere except in the world of mathematics. The "$g$" in the resulting equation is also a number, which as a number can be used as a multiplier of other numbers.

The moral to be learned from this example is that *not every expression occurring in mathematical physics is a symbol of anything that can be identified in a laboratory*. This is especially true when the expression contains a symbol of a mathematical *operation*. Take for instance the ordinary definition of velocity, $v = s/t$. One can not divide space as it is perceived by time as it is perceived. What one does is to divide the *number* obtained by a measurement of a spatial extension by a *number* obtained by a measurement of a temporal interval. This division is not performed by a moving object; it is performed by a mathematical operator. What we discover in this simple case is more obvious in more complicated cases. Take for example the expression of "the space-time interval" $s$ in the special

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theory of relativity,

$$s = \sqrt{c^2(t_2 - t_1)^2 - (x_2 - x_1)^2 - (y_2 - y_1)^2 - (z_2 - z_1)^2}$$
$$= \sqrt{c^2(t_2' - t_1')^2 - (x_2' - x_1')^2 - (y_2' - y_1')^2 - (z_2' - z_1')^2}.$$

Here we have among other things the square of a velocity multiplied by the square of a time. It is clear that no meaning can be given to this except as an operation mathematically performed upon numbers. Either of the two sets of symbols appearing on the right side of our equation is simply symbolic of a *number* identical with the *number* symbolized by $s$. If to the physical character of such a space-time interval any meaning is assigned other than that of a *number* obtained by mathematical operations on numbers obtained by measurement of space-intervals and of time-intervals, such a meaning carries over into mysticism. *Operationally*, the space-time interval is to be interpreted as a set of instructions to perform experimental operations followed by mathematical operations upon the numerical results thus obtained, with a statement that, if such operations are performed in the prescribed way, the resulting number will be found to be the same number, whether the experimental operations be performed on one or the other of two systems in uniform motion of rectilinear translation. *All "physical constants" are numbers.*

While the clear-headed physicist knows this to be true, the philosopher is likely to give another interpretation to the space-time interval. He is prone to make of it a kind of "thing" that remains constant. This is to substitute metaphysics for physics; once this substitution is made, the metaphysician is off in wild career. Space-time, thus treated, may even become (as in the hands of Samuel Alexander) something that gives rise by emergent evolution to electrons, then to atoms, then to molecules, then to organisms, then to nervous systems, then to minds, and eventually even to God! But it can at least be said for space-time, thus speculatively treated, that the space part of it is the space that appears in ordinary perception, and the time part is the time that also appears therein. Such a commonplace space, however, does not seem adequate to another philosopher. For Russell, as we have seen, the space of any one's perception, with all the percepts in it, is only a part of the physical brain, which is in a "physical space," whose intrinsic character can not be known. As speculation, all this is interesting; but when it is put forth as a necessary conclusion of relativistic physics, a protest is in order. *As a matter of logic, the space-time of the physicist is only a four-dimensional number series,* the numbers being numbers ideally obtainable from measurements made in the space and time of visual perception. In the process of measurement perceptual

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meter rods are applied to perceptual distances, and perceptual clocks to perceptual time-intervals. All else besides the mathematical operations and the perceptual background from which the numbers operated on are obtained is sheer metaphysical speculation. "The external world of physics" is a world of mathematical relationships among the observed facts of the familiar world when these facts are carefully measured with instruments themselves parts of the familiar world. The transformation of the one world into the other is nothing but the give-and-take, the coöperation, between the experimental and the mathematical physicist; and the recognition of this fact should *lie within* the scope of physics.

All of us are now familiar with the fact that in relativity the old-fashioned ether as a medium in which light-vibrations used to take place has been discarded. It had come into being, as I believe Lord Salisbury remarked, to provide a subject for the verb "to undulate." Its discard is so much to the good. But many thinkers still hold up their sleeves another card that should have been thrown away at the same time. There is still a *wave* even though there is nothing that waves. Only a few physicists have gone the length of a complete discard. Bridgman has discarded it as "a thing that travels," and G. N. Lewis has treated it as merely a transaction between two atoms. (However, Lewis rationalizes the transaction as a contact-phenomenon in four-dimensional space-time.) Interpreted in light of the way in which the wave is discovered, it is only a mathematical function, a mathematical relation between numbers obtained by measurement in a laboratory. Whitehead's "ether of events" and Russell's "connected set of events travelling outward from a centre" (*Philosophy*, p. 155) are nothing but hypostatizations of mathematical formulae. When Russell says: "We must not think of a light-wave as a 'thing,'" he is on firm ground; but when he goes on to say: "but as a connected group of rhythmical events," he is making metaphysical entities out of mathematical equations.

What is true of space-time and light waves is also true of the quantum. In the classical physics energy is $mv^2/2$. Now velocity as an observable fact can not be squared. Velocity as a number can be squared. Also mass if it is something that can be multiplied by the square of a velocity is only a number. To quote again from Lenzen (p. 28): "A similar confusion occurs in the use of the word mass. Thus one says:

| | |
|---|---|
| *This body is a mass.* | **(quantity)** |
| *This body has mass.* | **(magnitude)** |
| *The mass of this body is 2.* | **(number)**" |

For Lenzen it is mass *as number* that alone appears in physical theory. Thus we see that in physical theory a unit of energy (erg)

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is a number. Likewise the period of any "vibration" is a number; and consequently the quantum $h$, which is $6.55 \times 10^{-27}$ erg-seconds, is a number, since the ergs and the seconds that make up the quantum $h$ are numbers. There is no such "thing" as an erg-second. There is only a number that is called an erg-second because of the devious way in which that number was mathematically obtained from space and time measurements. The number $h$ appears frequently in the mathematical manipulations that the mathematical physicist engages in, taking as his starting point the numbers furnished him by the physical experimentalist. Its constancy is not the constancy of a "thing," but of a number. It is only a metaphysical interpretation that makes it into a thing. *All "physical constants" are numbers.*

When we are told by Enrico Fermi ("Quantum Theory of Radiation," in *Reviews of Modern Physics,* Vol. 4, No. 1, p. 132) that "practically all the problems of radiation which do not involve the structure of the electrons have their satisfactory explanation; while the problems connected with the internal properties of the electron are still very far from their solution," this statement can be interpreted in two ways. It may mean that the conclusions from various equations that are deduced, displayed, and discussed in the paper of which it is the concluding sentence, when interpreted back into experimental terms, give results confirmed by experiments within the limits defined by the statement, and that beyond these limits the equations do not work. This is the *physical* interpretation of Fermi's assertion. However, the reader may think that it means something metaphysical, namely, that radiation is a "thing" that expands in a spherical wave and at the same time is a hypomicroscopic bullet that goes straight at a larger bullet and hits it plumb in the head—a metaphysical, mystical two-in-one, "large enough to cover a 100-inch mirror," yet "small enough to enter an atom," as Eddington seriously puts it (p. 200), and then proceeds to write upon it a new name, which previously no man knew—the clarifying name "wavicle."

In view of this baptismal nomination, it is worth while to quote Eddington again: "It is true that the whole scientific inquiry starts from the familiar world and in the end it must return to the familiar world; but the part of the journey over which the physicist has charge is in foreign territory. [He must mean only the mathematical physicist.] Until recently there was a much closer linkage; the physicist used to borrow the raw material of his world from the familiar world, but he does so no longer. His raw materials are aether, electrons, quanta, potentials, Hamiltonian functions, etc., and he is nowadays scrupulously careful to guard these from contamination by conceptions borrowed from the other world. There is a familiar table

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parallel to the scientific table, but there is no familiar electron, quantum or potential parallel to the scientific electron, quantum or potential" (p. xiii). I venture to suggest that there is no parallelism in either case. The scientific table is just as much in foreign territory as the electron or quantum or potential, a territory so foreign that it is erroneous to speak of laying a sheet of paper on the scientific table, which is only a set of pure mathematical numbers. If electrons, which belong to world No. 2, are to be guarded with scrupulous care "from contamination by conceptions borrowed from the other world," they should not be allowed to keep on hitting the obscene underside of anything so contaminating as a sheet of paper that belongs to that other world.[3]

If, in reply, it be said that Eddington is merely employing a figure of speech, one can counter by saying that figures of speech in science are likely to be misleading, unless the resulting misconceptions are carefully guarded against. It is much better to employ the kind of language that Eddington elsewhere employs when he speaks of the elephant, all whose familiar characteristics are replaced by "a schedule of measures," (p. 254), so that "from the point of view of exact science the thing that really did descend the hill can only be described as a bundle of pointer readings . . . the hill also has been replaced by pointer readings, and the sliding down is no longer an active adventure but a functional relation of space and time measures" (p. 253). Here speaks the "exact scientist." But when he speaks of electrons bombarding the underside of a sheet of paper, he speaks in a manner to bewilder the layman. The bombardment should, on the same showing as in the case of the elephant, not be "an active adventure, but a functional relation of space and time measures," and the whole of world No. 2, to quote again a previously quoted passage, should be only *"the connectivity of pointer readings, expressed by physical laws, which supplies the continuous background that any realistic problem demands"* (p. 255).

In concluding this paper I will state its gist by saying that, if we take the assertions of modern physicists at their face value, physics deals with only operational concepts; the experimental physicist deals with concepts of instrumental operation and the mathematical physicist with concepts of mathematical operations. There is no non-metaphysical background for physics other than the facts of the familiar world that are capable of measurement, and mathematics which deals with the various relations of the numbers yielded by such measurements. All else in physical theory is *metaphysics* in the sense that it is something lying *beyond* the domain of physics. Therefore

[3] Space does not permit the consideration of the bearing of the thesis of this paper on the interpretation of the Heisenberg theory of indeterminacy. The reader will have seen that it has a bearing.

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when any philosopher appeals to the findings of modern physics as giving anything else than empirically ascertained measure-numbers and mathematically ascertained relations between such measure-numbers, he is appealing to a tribunal that has no jurisdiction in the matter, and therefore has no authority to hand down any decision in the case.

What then is the metaphysician to do? I presume that all he can do is to follow his best judgment in taking other facts into consideration than those that are amenable to treatment in a physical laboratory, and to apply to such facts such logic as he may have at his disposal (unless he be an intuitionist, in which case he has nothing to do but write down his intuitions as best he may). In doing this logically, the metaphysician should recognize that he is making assumptions that can not be proved. Like Eddington he may have an inner light; like Royce he may assume (not know for certain as Royce knew) that the external meaning of an idea is the complete fulfillment of what is partially fulfilled in the internal meaning; like the critical realist he may assume (not know as the critical realist knows) that there is a physical world, not purely mathematical, ever inaccessible to perception; or like the neo-realist he may assume (not know as the neo-realist knows) that everything that appears in perception is something that does not depend on being perceived in order to be. Personally I find none of these assumptions congenial; therefore to me they are not plausible. And yet I find myself with a strong metaphysical impulse, and this impulse moves me in a direction as little divergent from that of common sense as possible, consistently with facts and logic. But when it is asked what "facts" are and what are the facts, I find, in view of the eight different answers given to the first question in the last volume of the *University of California Publications in Philosophy,* (Vol. 14, which has just come to my hands), that a satisfactory answer can not be given except within the limits prescribed by the metaphysical assumptions originally laid down. But this is another story.

EVANDER BRADLEY MCGILVARY.

UNIVERSITY OF WISCONSIN.

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## DUALISMS GOOD AND BAD (II)[1]

B. WE have seen Mr. Murphy affirming "the validity of common-sense realism and the fatuity of recent attempts to avoid its solidly-grounded conclusions." But his attacks upon the theory of representative ideas sometimes proceed from idealistic or phenomenalistic premises. The truth of judgments about what are commonly called physical objects can not, we are told, be admitted to consist of a correspondence between "given copy and ungiven archetype" because the latter is by definition empirically unverifiable. "The veracity of my perception of a green tree or a gray rat . . . is to be found precisely in the meaning of ordinary activity and communication and the expectations we base upon them."[2] The phraseology here is, no doubt, rather vague; but the point of the observation appears to be that the meaning of the term "the veracity of a perception" consists wholly in certain relations between the perception and other conscious experiences, my own or those of others, and not in any relation to metempirical existents. So, again, it is said that "the duality of private and public experience" is simply "the common-sense distinction of sharable and unsharable meanings."[3] In his account, in such passages, of the meaning of judgments and concepts in general, Mr. Murphy commits himself to the position of logical positivism. The object of reference in a judgment is always some not-present experience which would serve as the verification of the judgment.[4] If an "ulterior object"—which can only mean here "an extra-experiential object"—"is introduced and made the standard for valid perception, . . . the distinction between reliable and unreliable meanings of perceptual objects" ceases to be tenable. It is true that

[1] Continued from preceding issue, No. 13, pp. 337–354.

[2] *LC.*, p. 58.

[3] *Ibid.*, p. 61.

[4] *Cf.*, e.g., p. 59, with reference to the judgments of perception: "*The sort of consequence which would verify my judgment does in this case genuinely determine its meaning,* and it does reveal the permanent, common, and independent nature of events, just in so far as that consequence is dependable, *can* be verified by standard observers, and *does not* depend upon what I suppose or believe the event to be, but on what actually occurs under the conditions specified. Any experience whose meanings are thus verifiable is the presentation of a common object, and it is the revelation of an objective situation whose reality can not be impugned by *the irrelevant introduction of some further reality, as,* e.g., *that of physical science, whose nature was not the object of reference here at any time*" (first and last italics mine). I can only reconcile these italicized phrases with the rest of the passage by construing the "independence" or "objectivity" ascribed to the events as consisting in their occurrence in *some* experience not identical with, nor dependent on, my present judgment about them. This would be epistemological dualism, but it would not be physical realism.

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even in the presentation of this view there is sometimes a persistent flicker from the language of phenomenalism to that of physical realism and back again. Thus the correct view "about the nature and reality of physical objects" is declared to be that of the operational theory: "the function of physics is to discover the effective operation of physical objects and not at all their 'inner' nature. This kind of knowing . . . can be verified experientially through such relationships and through the observed occurrence of those consequences which physical hypotheses would have led us to expect." Scientific knowledge is not "contingent upon the qualitative likeness of entities which, so far as physics can tell us, are basically and essentially different." It is "sheer vanity and illusion" to "attempt to qualify physical realities as the originals of representative ideas"; but it is "simply sound sense and reason" to seek to estimate "the functional relatedness of events."[5] Here we have, on the one hand, actual "physical objects" which *do* operate and about which physics can apparently tell us that they are "basically and essentially different" from our sense-data. How can it conceivably tell us anything about such objects—how, indeed, can their existence and "operation" be intelligibly affirmed—if we can not know or legitimately conjecture *anything* about their "inner nature" (e.g., that their qualities are other than those of sense-data)? But on the other hand, it is implied in the passage cited that we can not legitimately so much as raise the question as to what physical realities are, or whether they in any respect correspond to our ideas or sense-data. The only question that has meaning concerns the "functional relatedness of events"; and "events" here must presumably mean "experienced or experienceable events" exclusively, since if it included unexperienced and unexperienceable events, some "transitive knowledge" of physical realities and of their "inner nature" and relations outside experience would be implied.

Now phenomenalism is, of course, an old and respectable philosophical doctrine, and its polemic, here adopted by Mr. Murphy, has much *prima-facie* plausibility. But I must once more beg him—and others—to choose between phenomenalism and its opposite. Perhaps it is a breach of the amenities of philosophical discussion to intimate that a philosopher can not both eat his cake and have it; I nevertheless venture to suggest to Mr. Murphy that he can not both swallow up the entire "physical world" within experience and still keep a world of realities external to experience. And if it is the latter alternative that he really prefers, I would point out that there is in this no escape from the hypothesis of representative ideas. Knowing is a process occurring within experience; if it at any

[5] *Ibid.*, p. 68.

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moment refers to existents outside of experience—or, indeed, as we have seen, outside of a *particular* cognitive experience—there must be something occurrent within that experience which is then recognized as other than, yet as standing for, symbolizing, affording some present acquaintance with some attribute or relation of that external reality. If, on the other hand, his option is for idealism or phenomenalism, I would point out two other things—among many which might pertinently be mentioned. The first is that he does not thereby escape from the representative theory—for reasons indicated in the preceding section of this paper, and at greater length in *RD*.[6] The only escape from the representative theory lies in the solipsism of the specious present and in the total denial of the possibility of error. Second, the form of phenomenalism which (when he writes in that vein) his arguments imply has the strange consequence (among others) that *past* events can not be known, or even be objects of belief or of any kind of reference. If the sole object of reference in a present judgment about what are commonly described as events in the pre-Cambrian period, or even about events in the eighteenth century, is always some "consequence which would verify the judgment," then what most people suppose themselves to be talking about when they speak of "the pre-Cambrian period" or "the eighteenth century" is not a possible object of knowledge or of thought. If the belief "in physical realities as the originals of representative ideas" is to be abandoned on the ground that the ideas can never be compared with their originals, so must my belief that I had a great-grandfather; for my ideas about *his* characteristics and his existence are not less hopelessly incapable of comparison with their original. No proposition about "antecedent existences" can ever be empirically verified, in the sense of "empirical" required by the theories of meaning and of truth which Mr. Murphy at times accepts.[7] It is not legitimate to adopt an "operational" theory of meaning and to apply it to the "nature and status of physical objects," but to refuse to apply it to other cases to which it is clearly equally pertinent. That theory, as well as the theory of representative ideas, must accept the liabilities of its premises; and they seem to me much more insupportable liabilities.

The view about "the nature and reality of physical objects" which Mr. Murphy intends to maintain becomes still more difficult to make out when we consider his remarks about the status of scientific objects. In the first place, when dealing with this subject, he reverts sharply to his realistic position: "Experience in its own fashion presupposes unperceived objects and its occurrence provides some clue as

[6] Chiefly in Chapter IX.

[7] This consideration perhaps needs a fuller development, which I hope to give it elsewhere.

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to their nature." There *are* "*external* archetypes to which valid experience must correspond."[8] This is precisely the doctrine which he elsewhere appears to be vehemently attacking. But what, when he is assuming it, does he conceive these unperceived external objects to be? His principal contention is that they "can not possibly be identified" with the entities and processes which figure in theoretical physics. The reason why they can not is that "the world of physics differs so widely from that of ordinary experience that we can not any longer regard the latter as an attempted representation of the former." Now if this means merely that the visual percept of a table, which is a continuous motionless patch of brown color, can not be properly described as a "representation," i.e., as a faithful simulacrum, of a set of discrete, colorless, rapidly moving particles—or of some still more abstract scientific object—Mr. Murphy is merely enunciating a truism which no one disputes. Surely dualists ever since the seventeenth century have sufficiently often reiterated that percepts are *not* just like physical objects; the doctrine of the subjectivity of the secondary qualities was one way of saying this. The relevant question is whether the physicist's *concept* of the scientific object—e.g., of the set of particles and their arrangement and motion and of a causal relation between them and the existence and special qualities of the percept—is a representation of something, *not* that concept, which can be supposed to exist. The "physical object" which is in question here is the scientific object; and the "representative idea" is the physicist's idea of *it* as having certain unperceived attributes. And it is not clear how he can be said to have any idea of it without then having present in his experience a datum which in some fashion represents those attributes. Even if his concept is so abstract that he defines the object almost exclusively in numerical terms, e.g., as consisting of two discrete but qualitatively undefined and spatially indeterminate entities called quanta, he still has present to his consciousness a representation of two something which are discrete and are among the antecedent causes or conditions of what he is sensibly perceiving. Now does Mr. Murphy maintain that "physical objects as thus defined" (i.e., by the physicist) "can not possibly be identified with the external archetypes to which valid experience must correspond"? And if so, why? Does it appear to him a self-evident proposition that physical objects must have *all* the attributes of perceptual objects? Some of his language seems to imply this; and the reason which is (somewhat obscurely) suggested for this view is that the "external archetypes" must "correspond" to the percepts which are the means of our assumed knowledge of them. But this is the most extreme pos-

[8] *LC*, p. 67.

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sible form of "correspondence" or "copy theory" of knowledge—a form so extreme that few dualists have ever held it.

Meanwhile, what is clear is that Mr. Murphy thinks that the dualist "having differentiated experience and scientific objects as diverse realms of being, must now, to guarantee any valid knowledge, assert their essential resemblance, since only such resemblance will justify knowledge"; and that this necessarily involves the dualist in "embarrassment," and in fact in contradiction, since he is also compelled to admit that "experience" and scientific objects do *not* have "the same properties and relations."[9] There is a curious double confusion here. Most dualists do, it is true "differentiate experience from scientific objects"; but they do so in two distinct senses, and in neither does any embarrassment or contradiction result. (*a*) If Mr. Murphy means by the properties of "experience" the attributes of particular experienced sense-objects (e.g., their perceived shape and color), dualists commonly hold that these attributes are not all necessarily to be ascribed to the corresponding physical objects. And they are under no logical obligation to do otherwise, since they do not assert that unpurged and uncorrected sense-perception necessarily constitutes a valid knowledge of the physical world. What they usually hold is that representations of that world which are, indeed, based upon perception, but are reached through reflection and scientific inquiry, afford such knowledge. (*b*) The other entirely distinct sense in which the dualist—i.e., the psychophysical dualist—asserts that "data are destitute of the essential properties and relations of physical objects" is that data are destitute of the specific attributes and relations essential to the *physicality* of physical objects. This does not mean that the two can have no characters in common. If a physicist has an image of a certain number and arrangement of the electrons in a lithium atom, and if there happen to exist lithium atoms so constituted, then the image resembles the atom in the number and arrangement of the units presented in it, and it is different from the atom in that the atom is a part of the physical world, possessing causal efficacy in accordance with physical laws, while the image is not. Anyone who asserts that there is a physical world and that data are not true parts of it *eo ipso* "differentiates experience and physical objects" in this sense. And we have seen that Mr. Murphy expressly asserts this.

*C.* However, it is true that, when he is in his more realistic humor, the physicality of sense-data is affirmed as well as denied. While we are told on one page that the "monistic realist" was mistaken in attempting "to show that 'the visual percept (the datum) is identical with part of the perceived object,'" and that the "physi-

[9] *LC*, p. 67.

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cal status of data" can not be defended,[10] on another page the objection is raised that if visual data are only "bits of mental content," no astronomer ever "saw a star at all"; that, upon the same hypothesis, if the rule is followed of "interpreting things [we] can't see on the analogy of those [we] can," the mind-stuff theory "would be more orthodox than any which presupposes a literal physical reality"; and that "it is only by talking as if we did *really perceive objects of the sort which a realist assumes* (*i.e., physical objects*) *and not the visual and tactual content* inaccurately called by that name, that our author can make out a case for realism."[11] Mr. Murphy at least seems to be talking here in that way; he is apparently arguing for the view that in perception that of which we are directly aware, the immediate datum of experience, is a "literal physical reality" and not "visual and tactual content" of a non-physical sort—that, in short, the actual distant star *in propria persona* must be supposed to enter our experience, since if it did not we could never "know" it at all and no case for realism (which Mr. Murphy here accepts) could be made out. Now, these two views are manifestly irreconcilable. If data are non-physical, "literal physical realities" obviously can not be data. If the argument for the former view is cogent, that for the latter must be invalid—unless we are confronted with a further antinomy unknown to Kant. I would, then, once more urge that the logical liabilities of the one view or the other ought to be assumed by Mr. Murphy or any other philosopher who professes himself a realist.

Some reference should perhaps be made, before concluding, to Mr. Murphy's discovery that there are seventeen distinct dualisms in *RD*. I can only hope that he has underestimated the number. For the term "dualism," when no particular problem or universe of discourse is specified, is, of course, simply a name for any assertion that two existents or two factors are to be recognized in some situation in which it has been, or conceivably might be, held that there is but one. Any setting up of a distinction, therefore, and any denial of a too facile reduction of differences to identity, is a "dualism." The making of distinctions and the avoidance of uncritical unifications is so important a part of the business of philosophizing that a somewhat lengthy philosophical work ought, surely, to contain more than seventeen dualisms. But the question of importance is whether the two specific major dualisms—the epistemological and the psychophysical—with which the volume in question was chiefly concerned can be avoided. That either can be,

[10] *LC*, p. 34; *cf.*, also p. 35: "While agreeing that data as such and in their immediate being are not physical objects."

[11] *Ibid.*, pp. 60–61, my italics.

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Mr. Murphy seems to me neither to have shown nor even to have consistently asserted. His paper is therefore a welcome addition to the evidence that a convincing and consistent denial of them is impossible.

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## BOOK REVIEWS

*Belief Unbound. A Promethean Religion for the Modern World.* WM. PEPPERELL MONTAGUE. New Haven: Yale University Press. London: Humphrey Milford. Oxford University Press. 1930. Pp. 98.

Professor Montague has perhaps never written with more vigor than in this little volume. It breathes the spirit both of the critic who would destroy what he regards as unsound or harmful, and of the reformer who has the courage to build anew. The reader has at no point the sense of perfunctory apologetics, but rather of a task performed with genuine enthusiasm. This latter word is used advisedly, for it expresses a quality of life which Professor Montague exalts to high rank as a virtue. Love and Enthusiasm are for him the great human excellencies, "the two primary dimensions of righteousness," which express respectively "the extensive and intensive coefficients of the most abundant life."

One would search in vain through the various lists of the virtues for a like place given to enthusiasm. The nearest approach to this which I can recall is the condemnation of the opposite vice in medieval ethics, where *acidia* (or *acedia*) was employed to stigmatize the moral lassitude or indifference to which the life of the cloister was exposed. If Professor Montague seems to have weighted his ethics heavily with emotional elements to the neglect of the intellectual, it is only just to recognize that both love and enthusiasm are given a wider meaning than that of conventional usage. Love is made to embrace "breadth and number of interests," and through sympathy to include "the desires, interests and aims" of all lives. Similarly, enthusiasm is used, for want of a better term, to cover all that concerns "the hard work of actualizing potentialities." "Courage is the arch species of the genus," and includes "courage of the mind, the resoluteness to use intelligence to the limit in all dealings with our physical environment, our social institutions and our own inmost selves." Whatever may be one's judgment as to the value of the terminology employed, the context dissipates all perplexity as to the author's meaning.

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Professor Montague finds three phases of historical Christianity that are "repugnant to the modern temper." These are its methodology of Authoritarianism, its ethics of Asceticism, and its metaphysics of Supernaturalism. The first two are disposed of in a brief discussion which contains numerous pithy statements well worthy of quotation. The section devoted to Supernaturalism has a twofold aim. This consists, first, of the rejection of those miraculous events in the historical order which the orthodoxy of the past has felt compelled to accept; and, second, the defense of a type of supernaturalism which is the essential theme of the third chapter. Humanism and all forms of naturalism are summarily dismissed as failing to meet the requirements of a religion that will satisfy the needs, especially the emotional needs, of mankind.

The question remains, however, whether due account is taken of the possible future development of the religious sentiment. Certainly more radical changes have appeared in the long evolution of religion from its first crude beginnings than is involved in the transformation here contemplated. And it has to be remembered that the ideas and emotions that instinctively arise in man's relation to nature have been firmly attached by express teaching to supernaturalism. No generation has been free to fashion its conceptions in detachment from this fixed idea. Professor Montague's own temper, it may be said, is on the whole distinctly revolutionary. He elsewhere declares that the good life involves "a maximum of variation, innovation and adventure." Adventures in religion, it would seem, can not be ruled out or predetermined in character.

The second chapter, entitled "A Sanctionless Morality," offers in outline Professor Montague's system of ethics. He approaches the theory of value through a biological introduction which presents his favorite conception of "potentiality," more fully developed in the following chapter.

After an excellent discussion of the irrational element in conscience, and its effect in the prolongation of moral infancy, we are told that we give "unconditional respect" to the person who, from a sense of obligation, would do what we ourselves are "morally obligated to prevent." A certain measure and kind of respect we may accord. But I must confess to an inability to make this "unconditional." When the conscience of some petty and ignorant soul tyrannizes over others to their hurt, or when a great fanatic exercises cruel domination, my respect is greatly qualified. The conscientiousness of evil-doers would constitute a formidable chapter of human ills, persecutions, bloodshed, and torture. A Torquemada could apparently die in the satisfaction of a "good conscience" after having burned thousands of victims at the stake. We have been, in

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my opinion, far too easily satisfied with good intentions and sincerity of conviction as fulfilling the demands of morality. Today we see the whole world in a chaotic and bedeviled state because of stupidity and ignorance, uncriticized assumptions, and irrational loyalties. Our Anglo-Saxon literature has minimized the importance of intelligence and understanding. Even to Shakespeare and other famous writers it seemed an easy thing to know "what were good to do."

I find myself in full agreement with Professor Montague when he enters a *caveat* against immediate interests, enjoyment, or liking as providing an adequate principle of moral valuation. Such casual values, without the work of critical understanding operating to establish the connections and relations upon which significant and secure goods depend, are only primary empirical data for a theory of value. Moral valuation is indeed an "evaluation of values." Yet it is no less certain that the connection with immediate experience must not be lost. Otherwise there would be no escape from any perverse or fanatical idea of the good. This view Professor Montague seems fully to accept, for he recognizes the necessity of a criticism of the immediate utterances of conscience, and makes the rightness of an action proportionate to the extent to which it contributes to the "maximum of satisfaction."

A short section on Determinism and Free Will must be passed over with a brief comment. Professor Montague desires "an indeterminate spontaneity" that will enable him not merely to "repeat himself" but to make of himself "something other and better." Certainly no determinist holds the view that one is bound to a "repetition" of the past. Freedom, in the deterministic sense, consists precisely in the capacity to learn, to profit by experience, and to avail oneself of every increment of insight and wisdom that life may yield.

The positive religious message of the book is contained in the third part, entitled "God Finite and God Infinite." Two problems constitute "the prolegomena to every possible theology or atheology." These are the Problem of Evil and the Problem of Good. With refreshing candor it is insisted that the old partnership of infinite power and perfect goodness has to be dissolved. The apologists who affirm the infinite power of God are left to make the best of a bad case with his goodness. The conception arrived at is that of a God of finite power "working within the confines of an infinitely extended and all-inclusive mind."

On the negative side of the argument, much is made of the improbability that the "chance" motions of the primary elements known to physics could result in the production of life and mind. On the positive side, Professor Montague's pansychism, "the postu-

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late of an infinite spirit pervading an infinite body," and the concept of "potentiality" occupy a central position.

In any critical examination of Professor Montague's views, two important considerations should be borne in mind. The first is that his conception of religion leaves ethics completely autonomous. Religion prescribes neither the ends of human life nor the means by which they are to be attained. The age-old authoritarianism is completely rejected. Religion in his view offers indeed the *ratio essendi* of morality, but never the *ratio cognoscendi*. He seeks rather, by a radical reinterpretation of religion, to make it the source of hope and inspiration in man's long and arduous terrestrial adventure.

The second consideration is that Professor Montague is disarmingly free from dogmatism. It is in terms of possibility and hypothesis, not of assured knowledge or of any kind of certainty, that he offers his religious account of the world. However earnestly he argues his cause, or however warmly it enlists his intellectual and emotional allegiance, he never once loses sight of its tentative and hypothetical character.

Most critics would agree in rejecting the "chance" movements of "blindly whirling atoms" as a conception capable of explaining the world of rich variety that nature presents. But many would insist that the alternative to such a view is not an appeal to anthropopsychic supernaturalism, however guarded. And they would refuse to accept the highly abstract account of the world given by physics as valid for other than its own purposes. It has yet to be shown, I think, that organization into qualitatively different systems is not an inherent and fundamental operation of nature, standing in no need of an explanation extrinsic to its own physical processes. And I must confess that until some direct evidence can be offered of the existence of what we know as mind, human or animal, outside of those specialized organisms in which alone we can detect it, the conception of a mind pervading all nature seems to me to offer the gravest difficulties.

If for the moment, however, we accept the hypothesis of a limited Deity analagous to the human self, it seems impossible to assign, on logical grounds, the imperfections and evils of the world to a limitation of one side of his being. A consciousness pervading the entire physical world can by no means be straightway identified with a perfect or even a high intelligence. Not a little in the painful and tortuous processes of evolution looks like sheer stupidity. Other features of the world impress one as exhibiting a lack of sensibility to the injustices and cruelties of existence. And there are many phenomena which strongly suggest a highly temperamental being. Storms and floods, hurricanes and earthquakes, in their ruthless de-

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struction appear, on the anthropopsychic hypothesis, like fits of uncontrolled anger.

The central argument of Professor Montague is without doubt that which appears under the term "potentiality." This is "the private and not externally observable phase of a thing which is both the history of its past and the determiner of its future." There is, however, no such thing as "mere potentiality." In some sense it must be "present and actual." Past and present are indissolubly linked in the actuality of the thing itself. If we seek something that can accomplish this union, that can vicariously, as it were, represent in things at any given time or place events which "in their own right" belong to "other places and times," the only thing conceivable is consciousness. In short the potentialities of a thing are for itself the "content of its consciousness." The conclusion follows that as potentiality is real and universal, so is consciousness. It is frankly recognized that potentiality is a term in disfavor among philosophers. The reason for this, we are told, is that the term commonly expresses only part—and that the less important part—of its rightful meaning, viz: what, to the external observer, "will appear as its future."

One interesting implication of Professor Montague's doctrine of potentiality, if I read him aright, is that mind is a special kind of physical structure, which can in certain ways affect matter, though it is not, I take it, an attribute of matter. At this point also would appear the cleft in reality where the metaphysical dualism of the author may be sought. If I am mistaken in thinking that he would impose a more refined physical substance upon the baser foundations of matter, my error is not due to any lack of will to understand a unique and ingenious theory.

Now in beings possesed of consciousness it may be freely granted that a part of their potentialities are doubtless present as "content of consciousness." But consciousness is not the possessor of all of these. Many lie hidden and are dependent for their actualization, and ultimately for their presence even in consciousness, upon external and incalculable factors in the environment.

In the case of things, I see no ground whatever for appeal to consciousness to ensure potentiality as "present and actual." The seeds which the gardener plants are unconscious bearers of life potentialities. These are dependent for their actualization upon external factors precisely as the human self is dependent upon them for development and even for life itself. Nor do the seeds in question, even from "the standpoint of an external observer," point merely to the future. Their selection for propagation has been carefully determined by their past, the stock from which they came with all the Mendelian characters which they carry securely within

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as a real but unconscious possession. The same is true in principle of the sod beneath our feet, of the ore from a mine, or of the rocks scattered on the surface of the earth. In their material structure are potentialities for the future and indelible records of their long past.

It chanced that the reviewer recently saw a copy of this book which had been read by a young graduate student of philosophy. The margins were thickly strewn with questions and comments. Had the author seen this copy, he would have been assured that his work had achieved its purpose in stimulating the thought of the reader, and that, if it had not won full assent, it had escaped the most unhappy fate that can befall either a religion or a book—"indifference." So much is here admirably stated, and so many fields for discussion are opened to view, that I heartily wish for the volume a wide circle of readers.

WALTER GOODNOW EVERETT.

BROWN UNIVERSITY.

*The Scientific Outlook.* BERTRAND RUSSELL. New York: W. W. Norton & Co. 1931. Pp. x + 277.

If in this book Mr. Russell has not achieved an adequate popular account of the nature and significance of scientific method, he has at any rate succeeded admirably in giving expression to his own urbane, sceptical temper. In it he manages to convey to his readers, in spite of the handicaps created by his teasing wit, something of that critical attitude which, if cultivated, must make impossible fanatic loyalties of any kind. Mr. Russell has been long a convert from ethical absolutism to a relativistic epicureanism, tempered however by a realization of the social character of human behavior. But his own impulses are naturally contemplative rather than active and social, and this book reflects his own unreconciled allegiances to self and society. Science, which he thinks is so splendid when it remains contemplative, he fears when it becomes manipulative. For men easily become drunk on the power science gives them, and so drunk, develop into cruel tyrants over their fellows. The increasing socialization of all human activity, made both necessary and possible by improved scientific technique, fill Mr. Russell with a restrained foreboding.

The book is divided into three parts. The first deals with the method and metaphysics of pure science proper, and with the religious interpretations which have been placed upon it. The second considers some of the achievements of science in various fields and the increased power which has come to men as a consequence of its growth. The third part treats of the applications of scientific tech-

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nique to social problems, and is a Cassandra-like prophecy of what is in store for us when everything that is congenial to contemplative and poetical temperaments shall have been rooted out because of the unwisdom of the wielders of power.

In his discussion of scientific method, Mr. Russell is only rarely analytical. By far the best things in the book are the casual asides with which it is strewn. But this judgment, alas, can be passed on all of Mr. Russell's recent writings. Accurate historical knowledge is not his forte. A reader will certainly get mistaken notions about the achievements of Greek science, on the significance of the work of such men as Kepler and Galileo, or about the historical opposition between deductive and inductive logic, if he relies on Mr. Russell. Nor is the ordinary reader likely to get sound views on scientific method by being told that the stages of inquiry are observation, the formation of hypotheses, and the deduction of consequences,—in spite of Mr. Russell's insistance that it is "significant" facts which must be observed. Nevertheless, the pleasant reading chapters contain penetrating remarks which should be taken to heart not only by the tyro, but also professional students of methodology. Thus, he points out that science advances by successive approximations, and yet its goal is a system and not simply a heap of information. And he dispatches very neatly the crude empiricism which goes hand in hand with the doctrine of crucial experiments, by showing that almost always a verified or refuted proposition follows not from the visualizable details of a theory, but only from some highly abstract relations involved in it.

Mr. Russell is distinctly at his philosophic worst when he touches upon metaphysics. Order, unity, continuity, are for him human inventions, although how such "inventions" can give men power unless the subject-matter controlled also possesses them, is a question he never faces. However, his wit is most devastating when directed against the preposterous attempts to bolster up religious beliefs by using the latest results of the sciences for theologic purposes. The current answers to age-long questions concerning God, freedom, immortality, are by no means satisfactory simply because they are worded in terms of differential equations and quantum conditions.

Mr. Russell prefers splendid individuals to splendid organizations. This preference may account for many of his ominous prophecies as well as for some of his remarks on the importance of great men in history. At one point, indeed, when he is trying to show that all the features of modern civilization are ultimately due to Galileo, his argument is sufficient to prove a first cause. It is also a pity that he does not take a more critical stand to the claims of psycho-analysis. But perhaps his persistent interpretation of men's behavior *à la*

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Freud should be set down to a desire to pull the leg of his readers. Finally, there is a danger that Mr. Russell's subtly ironic remarks about the relative inferiority of negroes and whites may be taken as expressions of his own views and accepted therefore as sober truth.

ERNEST NAGEL.

COLUMBIA UNIVERSITY.

*The Nature of Evil.* RADOSLAV A. TSANOFF. New York: The Macmillan Co. 1931. Pp. vii + 447.

The appearance of a serious philosophical treatise on the "nature of evil" is a surprise to one who is acquainted with the temper of present-day philosophical thought in America. The naturalistic attitude is so well established that it takes considerable daring to present evil as an ontological problem as well as a general term descriptive of certain unpleasant facts. On the other hand, although the problem of evil is real to the pious and distressed among the vulgar, more sophisticated Christians declare it insoluble, only to add that the best solution is the conception of a Deity who is cooperating with mankind to overcome evil and establish his kingdom of righteousness.

It is in such a philosophical and theological atmosphere that this book of Professor Tsanoff's has appeared. Whatever preconceptions one may have concerning the nature and problem of evil, one must regard this volume as a good and comprehensive survey of world opinion on the subject. In addition to the standard writers and religions, many less well-known figures are introduced into the discussion, e.g., the much neglected Pierre Bayle, Giacomo Leopardi, Alfred de Vigny, and the more than half dead Hartmann. Therefore, one who would acquire an inclusive view of the subject will do well to peruse the pages of this book. He may get a feeling of the human significance of the fact of evil, and perhaps, incidentally, be intrigued to consider and weigh the merits of the various historical positions.

However, unfortunately Professor Tsanoff's treatment of the various writers he undertakes to interpret sometimes appears as inadequate. One is disappointed to find statements which reveal little justice done to the genius of given historical conceptions of life, and which repeat hackneyed views concerning them. A good illustration of this is the discussion of Brahmanism and Buddhism (pp. 8 ff.). The author reads an illusionism into Upanishadic philosophy which has no place in the metaphysical-moral atmosphere of the Upanishads. "Maya" does not mean "illusion" in our epistemological and psychological sense; and besides, it is mentioned only twice in the whole of the *Thirteen Principal Upanishads.* Buddha's

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"Dharma" has also caused offense to the author. But he needs to be reminded that "Nirvana" is achieved through the "Eight-fold Path" as well as the extinction of desire (which last is somewhat different from the "extinction of self"). Furthermore, Buddha's view of the world is primarily an assertion of its vanity and impermanence, and not of its vaporous reality. These may seem subtle and insignificant distinctions; however, they are essential to an adequate appraisal of Brahmanism and Buddha.

Even more unsatisfactory is the author's treatment of the "Christian-Medieval Tradition." The conflict of the Church with Gnosticism, Manicheanism, Pelagianism, is presented without a clear view of the type of piety which made these several heresies unacceptable. Orthodoxy and heterodoxy represented two opposite tendencies. The former subsumed the "problem of evil" under the conception of Divine providence and initiative. The latter placed the sources of evil outside the realm of Divine government. They naturalized evil and limited Divine sovereignty. Such was the real issue which Professor Tsanoff has blunted with partially relevant discussions. This fact is best exemplified in his treatment of Pascal, where, after introducing the controversy between the Jansenites and the Jesuits, he goes on to give a long critique of Pascal's famous wager, which concerns faith rather than the nature and problem of evil. One might add that perhaps the weakest point of the book is the way in which many authors are introduced and then set aside without adequate treatment, e.g., in the chapter on "Eighteenth Century Rationalism."

*The Nature of Evil* is not a merely historical and descriptive book. It has a thesis which is presented in the last chapter, on "A Gradational View of the Theory of Evil." Here the author avoids both pessimism and optimism, both absolute idealism and naturalism (by these terms he understands views which are fairly simple and vulnerable), and presents a view of evil which is congenial to common sense. Evil is neither insuperable nor negligible, neither ultimate nor illusory. It is both relative and real, a thing to be fought and overcome. Thus the problem of evil is ultimately practical. Professor Tsanoff makes much of the absolute idealist's tendency to regard evil as merely a matter of finitude and the naturalistic view that it is merely a human concern. Such estimates of absolute idealism and naturalism, while in harmony with common opinion, are oversimplified and unfair. What would Professor Tsanoff say about Bernard Bosanquet, or Roy Wood Sellars, or John Dewey? One can not resist the suspicion that his own philosophical position, which appears to be akin to "Personalism," has colored unduly his critique of views other than "personalistic." A realistic conception

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of evil is not closed to naturalism or absolute idealism. In fact, it is more congenial to "realism" than to "personalism." The latter's defense of the objectivity of "value" is inseparable from the conception of a cosmic Experiencer (p. 390). The naturalistic realist need not take recourse to such a difficult argument, which issues in problems more confusing than the "problem of evil."

Moreover, although the author asserts the real reality of evil, has he presented a conception of God-and-evil which does justice to the historic Christian view of providence? It appears that he has made a plea that evil be taken in dead earnest, and put aside the real problem of evil, which has sting and significance only where the soul of man agonizes to reconcile faith in benevolent Providence with real, real evil. Professor Tsanoff's gradational view of evil is plausible to reason and acceptable to the pragmatist, whether naturalistic or personalistic; but it can afford little comfort to the pious "in the valley of the shadow of death," who, after all, are the only ones vitally concerned with the "problem of evil."

JOSEPH HAROUTUNIAN.

NEW YORK CITY.

*The Province of Logic.* RICHARD ROBINSON. London: George Routledge & Sons. 1931. 292 pp.

The subtitle of this book, "An Interpretation of Certain Parts of Cook Wilson's *Statement and Inference,*" indicates its essential subject-matter. The author has attempted "to discover and develop Cook Wilson's view of the province of logic" (p. 1) by analyzing, supplementing, and balancing the disconnected statements as they are to be found in A. S. L. Farquharson's recent edition of this great teacher's manuscripts. Since Cook Wilson felt that the province of logic could not be determined prior to a consideration of certain problems commonly recognized as logical, the author is obliged to analyze the notions of judgment, quantity, quality, relation, modality and the subject-attribute relation. He then considers Cook Wilson's views as to the relation of logic respectively to the special sciences, metaphysics, grammar, and psychology. This concludes Part I, the results of which are then summarized in a special chapter. Part II is a description and estimation of Cook Wilson's general method of philosophizing and views as to the extent of knowledge. For the purposes of reference there is given at the end of the book a numerical list of the paragraphs in *Statement and Inference* which are considered by the author, with a corresponding list of the pages in the book where these topics are considered.

The success of the attempt must be measured by the fact that Cook Wilson never seems to have considered this question specifically,

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and consequently never answered it clearly. The author tries, therefore, to show what view may be justly attributed to Cook Wilson upon the basis of the random statements which he has made. The author seems to be eminently prepared for such a task, having studied at Oxford and worked with H. A. Prichard, who was himself, of course, in intimate touch with Cook Wilson and his views. It is to be presumed, therefore, that the author's conclusion represents Cook Wilson's view so far as that can now be determined.

A book of this kind is unquestionably valuable, though it will have an appeal for a limited group only. Cook Wilson actually exerted a great influence upon English classical and philosophical thought, but his contact was personal and as a teacher rather than through his writings. Thus his influence was evanescent, and a book of this kind may serve to make it more permanent and widespread. The author's presentation is neither brilliant nor profound, but it is obviously fair. One might easily argue that the nature of the subject-matter forbade him to engage in that greater freedom in the play of the imagination and to add the many embellishments and overtones which would have made the book intrinsically more stimulating and interesting. The style of the book was determined by the subject-matter, and the subject-matter will always have an appeal for that small group who, like Plato's young man, delight in these subtleties and find in them a treasure of wisdom.

A. Cornelius Benjamin.

University of Illinois.

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## JOURNALS AND NEW BOOKS

Revue de Métaphysique et de Morale. 39e Année, No. 2. La représentation simultanée des possibilités dans la nouvelle physique: *L. de Broglie.* De la vraie et de la fausse conversion (suite et fin): *L. Brunschvicg.* L'attention et le libre arbitre selon saint Thomas (suite): *J. Laporte.* Les formes du raisonnement: *A. Dorolle.* L'œuvre de Gustave Belot: *J. Renauld.* Une philosophie de l'invention. M. Édouard Leroy (fin): *L. Weber.*

Scientia. Vol. LI, N. CCXLII–6. The Meteorology of Yesterday, To-day, and To-morrow: *N. Shaw.* Ueber den Aufbau der hochpolymeren Substanzen: *H. Mark.* Comment l'organisme maintient-il son intégrité: *E. Zunz.* La scienza indiana e el suo valore: *A. M. Pizzagalli.*

Revue des Sciences Philosophiques et Théologiques. Tome XXI, No. 2. Réalisme et méthode: *E. Gilson.* La notion d'immortalité de l'âme dans la philosophie française du XIXe siècle. (II): *L. Foucher.*

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THE NEW SCHOLASTICISM. Vol. VI, No. 3. Notes Exégetiques sur la Théorie Aristotélicienne: *Marcel De Corte.* The Universe Around Us: *C. Williamson.*

Bergmann, Hugo: The Philosophy of Solomon Maimon. (Written in Hebrew.) Jerusalem: At the University Press. 1932. 180 pp.

Brocher, Henri: Le Mythe du Héros et la Mentalité Primitive. (Bibliothèque de Philosophie Contemporaine.) Paris: Félix Alcan. 1932. 126 pp. 12 fr.

Casotti, Mario: Educazione Cattolica. Brescia: Società Editrice "La Scuola." 1932. 254 pp.

Devaux, Philippe: Lotze et son Influence sur la Philosophie anglo-saxonne. Contribution à l'étude historique et critique de la notion de valeur. (Archives de la Société Belge de Philosophie, Troisième Année (1930–1931), Fasc. No. 2.) Bruxelles: Maurice Lamertin. 1932. 48 pp. 8 fr.

Dingler, Hugo: Geschichte der Naturphilosophie. (Geschichte der Philosophie in Längsschnitten, Heft 7.) Berlin: Junker und Dunnhaupt Verlag. 1932. vi + 174 pp.

Everett, Walter Goodnow: The Uniqueness of Man. (University of California Publications in Philosophy, Vol. 16, No. 1, pp. 1-27.) Berkeley: University of California Press. 1932.

Grassi, Ernesto: Il Problema della Metafisica Platonica. (Biblioteca di Cultura Moderna.) Bari: Gius. Laterza e Figli. 1932. 227 pp. 14 l.

Nihard, René: La Méthode des Tests pour initier les Educateurs. (Les Sciences et l'Art de l'Éducation.) Juvisy (Seine-et-Oise): Les Éditions du Cerf. 1932. 236 pp.

Talbot, Edward F.: Knowledge and Object. (Ph.D. dissertation, Catholic University of America, 1932). Washington, D. C. 155 pp.

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## NOTES AND NEWS

Dr. Howard D. Roelofs of Stanford University, who served as visiting professor at Amherst College during 1931–1932, has been appointed Head of the Department of Philosophy at the University of Cincinnati as successor to Professor G. A. Tawney who is now at the University of Illinois.

Kent State College at Kent, Ohio, for many years a Teachers' College, is now establishing a Liberal Arts College and will introduce philosophy into the curriculum in 1932–1933. Their first appointment is that of Dr. Maurice Baum as Associate Professor.

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Some Early Holistic Psychologists. W. D. COMMINS.
Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 9. April 28, 1932.**

On Persuasion. RAPHAEL DEMOS.
Logic and Superstition. J. R. KANTOR.
Superstition and Logic. WENDELL T. BUSH.
The Final Solution of Zeno's Paradox of the Race. A. USHENKO.
Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 10. May 12, 1932.**

The Displacement of the Sense-Datum. D. S. MACKAY.
On the Instrumental Analysis of Thought. CARLOS KLING.
Epistemology and Symbolism. M. WHITCOMB HESS.
Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 11. May 26, 1932.**

The Prestige of the Infinite. GEORGE SANTAYANA.
Report of the Thirty-Third Annual Meeting of the Western Division of the American Philosophical Association. A. CORNELIUS BENJAMIN.
Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 12. June 9, 1932.**

Substances, Events, and Facts. L. SUSAN STEBBING.
A Critical Analysis of the Concept of Introspection. MARTEN TEN HOOR.
Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 13. July 7, 1932.**

Dualisms Good and Bad (I). ARTHUR O. LOVEJOY.
A Spinozistic Fancy. B. A. G. FULLER.
Book Reviews. Journals and New Books. Notes and News.

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THE CENTURY
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# ETHICS

By
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THE JOURNAL OF PHILOSOPHY

# THE INADEQUACY OF THE HEDONISTIC INTERPRETATION OF PESSIMISM

It is a matter of some interest that pessimism should not have been treated systematically until the coming of Schopenhauer. When one examines the literature of more or less philosophic treatments of pessimism, one finds that it was Schopenhauer who, through his arresting masterpiece, stirred up most of the interest in the discussion of pessimism. Not only in Germany, but likewise in France and England, defenders of the optimistic faith arose who sought to demonstrate that, after all, life was worth living.

To us to-day it may seem rather surprising to discover how large a place in the subsequent discussion of pessimism was given over to a consideration of hedonism. In the English language perhaps no more ambitious attempt at refutation was made than that by James Sully in 1877. Though Sully gives a rather wide interpretation to pleasure, and though he recognizes qualitative differences among pleasures themselves, he obliges his readers to wade through long and often dreary discussions, calculated to show the absurdity of arriving at pessimistic conclusions by maintaining that pains and suffering greatly outweigh pleasures. Since Sully was himself a psychologist, one might perhaps understand why so much space should be given over to a consideration of the psychology of hedonism in attempting to refute pessimism. But not only men of Sully's generation interpreted Schopenhauer's pessimism as based on hedonism, but modern critics like George Simmel, in his *Schopenhauer und Nietzsche*, and Johannes Volkelt, in his *Arthur Schopenhauer*, and James Ward, in his *The Realm of Ends*, give great prominence to their analysis of Schopenhauer's pessimism as being essentially hedonistically grounded. Now, it must be admitted that Schopenhauer can not wholly escape responsibility for resolving pessimism into a simple matter of hedonistic calculation. More than once Schopenhauer asserts that, if any man were to compare the sum of his pleasures with those of his pains, he would begin to see, in terminology borrowed perhaps from Schopenhauer's earlier experiences in the counting house, that life was bankrupt, that the receipts of pleasures would not begin to balance the expenditures of



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pains (*W. W. V.*, II, p. 658). But it is necessary to distinguish between Schopenhauer's empirical, or *a posteriori*, argument for pessimism and his metaphysical, or *a priori*, argument. It might be admitted without further ado that, when Schopenhauer speaks of the empirical proof for pessimism, hedonistic considerations are in the forefront, though those who seek to refute his hedonism by recourse to statistics are doomed to failure because, while Schopenhauer in one breath speaks of the possibility of reaching pessimistic conclusions by striking a balance between pleasures and pains, in the very next breath (II, 659) he asserts that the mere presence of pain in *any* form would make optimism impossible and establish pessimism. He cites Petrarch's famous line, "Mille piacer' non vagliono un tormento," which Michelangelo seems characteristically to have turned into "a thousand joys are not as good as a single torment." The painful and long extended demonstration, therefore, on the part of Schopenhauer's refuters that no statistics making inevitably for pessimism could be adduced, goes wide of the mark. But even more important than this is the further consideration that, after all, Schopenhauer's pessimism is essentially and systematically grounded in his diagnosis of the nature of reality as Will. Simmel and Volkelt both must admit that the difference between his empirical and his *a priori* argument is important. Schopenhauer does not say that the essence of Will is a restless search after pleasure. His Will is not the Will to *pleasure*, but the Will to *live*. Now, since Will is the essential reality in all of its manifestations; since it is *the* cosmic reality found in crystals as well as in trees, in the stars and the Milky Way, as well as in man, and since it displays itself by constant striving, it is in principal doomed, because, as Simmel points out, Will is all the reality there is, and it is therefore impossible for Will to set up for itself an object of desire other than itself. In its self-transcending efforts it must by its very nature always return to itself. Furthermore, Will is in principle non-rational; it is, therefore, purposeless and lacking purpose it is in principle doomed to strive after no purpose whatsoever. The Will is, if one may use the expression for an unconscious reality, a self-divided, unhappy solipsist. What rôle can pleasure play, except metaphorically, in such cosmic considerations? It is only in sentient being that striving after pleasure could arise, but sentient beings constitute but a part of Will's infinite objectivications. This metaphysical pessimism goes far deeper than any empirical observation could. No matter what ends even sentient manifestations of the will might set up, high or low, worthy or ignoble, frustration alone could result.

Were there space, it would be of interest to go more fully into the question as to what degree, or to what degree only, Schopen-

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hauer's pessimism may justifiably be regarded as hedonistic in basis. But for the purposes of this paper it is of greater interest to indicate further that in any case and no matter how Schopenhauer's pessimism is grounded, it was, and is, an error on the part of his critics to believe that the refutation of Schopenhauer involves at once the refutation of pessimism as such. In the study of pessimism Schopenhauer does, indeed, deserve much attention; but no more than one historical, philosophical system can be regarded as identical with philosophy itself, can Schopenhauer's pessimism be regarded as constituting pessimism itself.

Pessimism is an extreme word; its attitude is extreme. It has for that reason often been rejected, along with optimism, in favor of a more moderate term and attitude like meliorism (James Sully, James Ward). But the very extreme emphasis is a necessary part of its character, for all of its appearing to a man like Santayana like an impertinence. This extreme aspect will be seen to have for its correlative an extreme worth that has been denied. Now, extreme worths are not at all unusual in discussions of ethics. Is not the supreme good, the *summum bonum,* that which alone makes life worth living, an extreme itself? Pessimism is closely linked with the search after the highest good. Like a connoisseur of diamonds, the pessimist may at times seem despondent because there is an irremediable flaw in what otherwise might be most precious. If a definition for pessimism is desired, the following might be offered: pessimism is a judgment of value regarding life or reality as a whole, which results from the conflict between man's *supreme* value and the supposed facts of life.

Since pessimism concerns man's supreme value, it at once becomes evident that the position, that pessimism concerns merely the relative superiority of pleasures over pains, is far too simple. It is true that the history of Western philosophy from its very beginning in the early Greek days presents the important movement of hedonism which with various vicissitudes and in various guises extends down to our own day. Hedonism *is* an important ethical theory, and I should not wish to minimize its significance nor its perennial seductiveness. One need not, then, go so far as Nietzsche, who maintained "that no one seeks pleasure—only the English do that," in order to protest against the exclusively hedonistic interpretation of pessimism. If the definition just announced is acceptable, it must follow, without any necessity to labor the argument, that there are as many types of pessimism possible as there are supreme values which appear denied by reality. Each individual will, of course, strive in his own person to win for himself some organization of values in accordance with the supreme good. The individual trying

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to make for himself a home in which his spirit can thrive, will of course not rest until he has found for himself a value which commands his greatest allegiance. But a student of pessimism, studying its various types with the eyes of an interested spectator, must for the moment eschew the task laid upon him also to decide for himself upon the supreme value among the various values that thoughtful human beings have selected as possessing most worth. If space permitted, it would be of interest to pass in review all the types of pessimism; those that have in the past harassed men's minds, and those which afflict us even at this time. It would seem that, for convenience of classification, one may study on the one hand, the perennial types of pessimism and on the other, those types which, though not unrelated to the pessimism of all the ages, nevertheless wear a modern aspect. Depending on where one finds one's highest values particularly frustrated, one may be pessimistic about oneself, about society, or about the universe in which one has been placed. It may be of some value to take a few examples in rapid review. The pessimism which results from the conviction expressed by Faust, "Dass wir nichts rechtes wissen können; Das will mir schier das Herz verbrennen" is, of course, very familiar. It is perennial, and may be discovered in much of the world's literature. If man is, as Aristotle defined him, "a rational animal," it follows that at least for some, cognizant of their unique status, a discovery of the rationality of the universe is one of the prime demands. The seeker after truth who comes back perpetually empty-handed and feels "that he evermore comes out the door that in he went," may well be pessimistic. On the other hand, should a person not lay great store by the possession of knowledge or truth; if, in other words, truth is not valued as a supreme good, pessimism would not invade that person's life. Then, there are those who regard personal perfection and virtuous conduct as man's highest aim and end. If they should discover, as many writers in the field of religion have, that the good that they will, they do not; and the evil that they will not, they do, and that there is no possibility, as St. Augustine among others maintained, for man ever to achieve the virtuous life, it will be clear that these writers whom James called, possessed of "a sick soul," must of necessity be pessimistic until they are blessed with the conviction that, where man by himself can do nothing, through the Grace of God he may be yet saved. Readers of philosophy have been made acquainted with an attitude rather similar to this type of pessimism in Hegel's "unhappy unconsciousness." The demands laid upon man by his supreme good are of such a nature that they can not be lived up to. Again this type of pessimism naturally can never be found among those who do not

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accept personal perfection as a good to be prized above all others. Is it cynical to say that this type of pessimism is perhaps more ancient than modern for all of our attention to inferiority complexes? Then, there is, of course, the type of pessimism which demands much of society. Society, when weighed in accordance with certain high standards, may be found wanting irretrievably. The pessimism resulting from society's unlovelinesses and inhumanities regards man's living together with man in justice, friendship, and harmony as the highest good. This type of pessimism is likewise found throughout all the ages, as satirists of human nature have often attested, but differing from the type just mentioned, we seem to be affected deeply by it just at this time when it would seem that mankind does not have heart or head enough to live otherwise than in open or suppressed conflict. Another type of pessimism, non-hedonistic in character, results when men, who expect life to be ordered rationally and purposefully, find themselves obliged to admit that man's career and destiny is subject to irrationality and chance, and that, as Schopenhauer maintained, there is rationality only in appearance, not in reality. ("Zu *sehen* sind diese Dinge freilich schön; aber sie *zu seyn* ist ganz etwas Anderes." II, 666.) Closely related and often merging with this type of pessimism is the pessimism which overcomes those whose supreme demand upon the universe is that man shall be free, and then feel obliged to regard the universe as denying all opportunity for significant human self-determination.

The foregoing examples of pessimism, non-hedonistic in essential characteristics, are representative of perennial pessimism. Contrasted with these perennial types there are modern varieties of non-hedonistic, pessimistic experiences which are attached to such aspects of science and the modern world that they could scarcely have arisen prior to the coming of certain disturbing scientific doctrines. I need only mention the pessimism that descended upon men from man's finding himself obliged to shift the center of his universe in accordance with the teachings of Copernican astronomy. In the field of biology, the doctrine of evolution, by denying design and purpose in the universe and by appearing to dethrone man from his pre-eminence among animals, robbed the world of its "soul of loveliness," and man of his ancient dignity. Then again, and more recently, the second law of thermodynamics plunged men like Henry Adams into deeply pessimistic thinking. Likewise, psychological determinism, resembling the denial of freedom of earlier days, but proceeding on different grounds, was not without its pessimistic repercussions. For the purpose of this paper, intended to show lamentable inadequacy of the exclusive, hedonistic interpretation of pessimism, I need only call attention to the tremendous chorus of pessimistic

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utterances occasioned by the coming of the machine age, the machine which threatened like a monster, created by a Frankenstein, to crush out all beauty and creativeness from the face of the earth. To conclude with one more example of modern pessimism, there is the pessimism which shudders when confronted with the vastness of the present social world, too amorphous, too sprawling to be subdued by man with the best will and intelligence in the world into a semblance of harmony and reason. One need only think what a monstrous thing a modern state would have been to Aristotle.

It has not been my intention to give a complete survey of types of pessimism, though I believe that the more important and more conspicuous types have here been enumerated. Neither have I gone into the question of whether it would be possible or desirable to construct *a priori* a list of all the possible types of pessimism, after the analogy of what was done in chemistry when a list of all the possible elements was constructed, prior to their actual discovery. The only point I wish to bring home with emphasis, is that to reduce the discussion of pessimism to hedonism falsifies the issue. In fact, acquaintance with pessimistic utterances would rather seem to indicate that not rarely hedonism is a *product* rather than a *cause* of pessimism; men snatch at pleasure only when life otherwise is found empty. This is certainly distinctly the case in the philosophy of Omar Khayyam, who had much more serious and important values at heart before he enjoined man "to take the cash and let the credit go." The pessimism of hedonism is then often not primary but derivative, the frustration not of the best but of the second best, accepted only in desperation because the best could not be had. There is nothing heartily merry, as Chesterton loves to show, in the exhortation: "Let us live and be merry, *for tomorrow we are dead.*"

Should the exclusive hedonistic interpretation be rejected, as I hope I have given ample reason for doing, the whole discussion of pessimism would assume far greater interest and seriousness. As I remarked at the outset of the discussion, to one acquainted with the literature of pessimism and with the issues involved, it seems remarkable that, except for the literature of refutation of Schopenhauer's pessimism, there has been, considering the importance of the subject, relatively little serious consideration of pessimism among philosophers. Unquestionably, too, those who were not in sympathy with a view of life which made its values dependent upon the relative superiority of pleasures over pains, found pessimism a lamenting over trivialities. Here and there one finds voices like that of Josiah Royce insisting on the necessity of taking pessimism seriously, and of sound philosophy going through rather than around pessimism. The rejection of the hedonistic interpretation may,

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therefore, do much to give to pessimism the consideration that it deserves. As a matter of fact, of course, underneath much metaphysical and even epistemological discussion there have been value-considerations of the sort involved in a discussion of pessimism.

It is not at all unusual for philosophers to conclude their discussion with the warning that any other philosophic attitude than that presented, would lead to despair. Let me quote from John Muirhead's recent book on *The Platonic Tradition:* "But I should be false to my own convictions if I did not add that, if they (idealistic principles) do not give us any final solution of the riddle of the universe, they can at least give us the assurance that we are working in the line of the great tradition of the Western World, and thus *save us from despair*" (italics mine, J. Muirhead, *The Platonic Tradition,* p. 441). It seems to the writer that it would be better frankly to face such pessimistic possibilities without trying to conceal that the questions underlying pessimism are among the most important of all. Renouvier well expressed this view by saying, "La vie ne peut avoir d'intérêt pour un penseur, qu'à la condition de chercher a résoudre le problème du Mal. La philosophie, la vraie philosophie serait celle qui nous apprendrait à vivre et à mourir."

The great diversity of types of pessimism naturally makes any attempt at refutation which proceeds as if there were no type other than the hedonistic often ludicrously irrelevant. To tell a man who is pessimistic about the success of man's passionate search after *truth,* that his search after *pleasure* was bound to be fraught with defeat, would be to yield to the dictates of unreason of some of Job's comforters. In much of the discussion of pessimism one has the feeling that the central issues are not touched at all. To tell a man who is filled with sorrow because life does not seem to be hospitable to what he has set his heart upon, that there are many pleasures still to be had, that birds are still singing, that the sky is gay, is as irrelevant as it would have been to have tried to console Mary over the loss of her Master by referring to sparkling sunshine and the gay laughter of children.

No, a recognition of the diversity of possible types of pessimism means that it is possible to investigate separately and, therefore, with much more clarity, the values and the facts associated with each. In general, it will then be seen that any intelligent approach to a particular type of pessimism must of necessity involve both a study of the underlying supreme value as well as of the facts and realities which presumably seem to go rough-shod over this highest value. Any attempt to overcome pessimism, then, of necessity would require either that the pessimist would be brought by himself or others to exchange his highest good for one that may find greater

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hospitality in the world of reality, or that he would convince himself or be convinced by others that the facts of life have been erroneously conceived, and that they do not really contradict the highest good cherished so deeply by the pessimist.

WESLEYAN UNIVERSITY. CORNELIUS KRUSÉ.

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## ON ZENO'S PARADOX OF MOTION

A RECENT discussion on the pages of this JOURNAL[1] of the celebrated paradox concerning Achilles and tortoise revives what appears to me to be a misunderstanding of the problem. The fact is that it is a mathematical, not physical, problem. The statement of it (in Burnet's rendition of a passage in Aristotle's *Physica*, vi. 9, 239b) reads as follows: "Achilles will never overtake the tortoise. He must first reach the place from which the tortoise started. By that time the tortoise will have got some way ahead. Achilles must make up that, and again the tortoise will be ahead. He is always coming nearer, but he never can make up to it."

As against Russell's criticism (*Principles of Mathematics*, I, ch. 42–43), I urge that Zeno's statement is not "directly contradicted by Arithmetics," for it does not presuppose existence of points, but only infinite divisibility of space and time. It is obvious, of course, as Mr. Ushenko says, that Achilles will overcome the tortoise "when both happen to be at the same place at the same time," but this is not an answer to the difficulties of the problem.

In regard to Bergson's objections (*Time and Free Will*, pp. 112–115), I contend that the problem is not "confusing space with motion," nor does it deal with two incommensurable motions, but with a single progressively decreasing distance between two moving points. Mr. Ushenko, therefore, is quite right in pointing out that the weakness of Bergson's argument is "that in asserting the incommensurability of two kinds of motion it fails to explain the fact that they can be compared."

But Mr. Ushenko himself seems to believe that the paradox can be solved by means of an imaginary four-dimensional diagram in which "when the world-line of Achilles and of tortoise representing their respective motions are drawn they are bound to intersect." True, but what of it? The answer states what common sense suggests, namely, that Achilles will catch up with the tortoise, provided he has enough time and provided the distance separating him from the tortoise is finite. But I can not see how this fact removes the difficulties of Zeno's paradox.

[1] "The Final Solution of Zeno's Paradox of the Race," by A. Ushenko, Vol. XXIX, pp. 241–242.

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What all these thinkers seem to overlook is that the very statement of the problem is a self-defeating one, for it precludes the possibility of a positive solution. Indeed, the problem involves two decreasing magnitudes: that of distance and that of time. And because they are being continually divided by one and the same number, the process is necessarily infinite. As long as we pay attention to the changing distance alone, no solution can be found. But as soon as we come to understand that each decrease of distance is paralleled by a corresponding decrease of time necessary for Achilles and the tortoise to pass to the next of the successive positions in question, it becomes evident that we are dealing here with a constant, created by division of a spatial magnitude by a temporal magnitude. If we designate the distance between the original positions of $A$ (Achilles) and $T$ (the tortoise) as $x$ and the time required for $A$ to cover it is $t$, the fraction $x/t$ is a quantity, constant and positive for all successive positions of $A$ and $T$, at least as long as we divide both $x$ and $t$ by one and the same number, no matter how variable it be.

Although Aristotle's critical account of Zeno's paradox is somewhat obscure, I think that the above argument is essentially in agreement with his remarks in *Physica* where, among the rest, he says: "So while a thing in a finite time can not come in contact with things quantitatively infinite, it can come in contact with things infinite in respect of divisibility" (vi, 2, 233a). In creating his puzzling problem, Zeno has unconsciously introduced into it a double infinity, "for the divisions of time and of magnitude will be the same." His paradox does not prove at all that motion is impossible, nor that there is some mystery about motion, but only that finite magnitudes can be conceived as infinitely divisible.

RALPH B. WINN.

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## BOOK REVIEWS

*Das Unendliche in der Mathematik und seine Ausschaltung.* FELIX KAUFMANN. Leipzig: Franz Deuticke. 1930. x + 203 pp.

*Philosophie der Logik und Arithmetik.* HUGO DINGLER. München: Ernst Reinhardt. 1931. 198 pp.

*Das Problem des Satzes vom Ausgeschlossenen Dritter.* PAUL HOFMANN. Berlin: Pan-Verlagsgesellschaft. 1931. 45 pp.

The three books under review are of uneven merit. But they all testify to the dissatisfaction felt in nearly every quarter with the present state of the philosophy of mathematics. The outlook on the analysis of scientific concepts which found expression in Bridgman's

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*Logic of Modern Physics* dominates many lines of philosophic inquiry in contemporary thought. The emphasis there placed on operations or procedures in the interest of making ideas clear is shared not only by the Peirce-Dewey theory of meaning, which always has been the champion of "operationalism"; it is being accepted by philosophers who otherwise have little in common. But operationalism is, for the most part, still only a program and the attempt to carry it through in various fields has much hard work ahead of it.

In mathematics the movement to exhibit the higher branches of the subject in terms of "operations" upon or relations between the integers, has been familiar for a long time under the name of the "arithmetization of mathematics"; although it is true that very important differences have arisen concerning the nature and significance of the "arithmetization." The great reforms which swept the "queen of the sciences" during the nineteenth century swept out the infinitesimals as "actual entities"; but they brought with them the transfinite numbers and the "actual infinite." The contemporary scene discloses the "actual infinite" attacked by those who wish to introduce the operational technique in full rigor into every branch of mathematics. And no one will gainsay that there certainly is still great need to interpret many mathematical concepts on the basis of well-grounded operations.

But advocates of reform have a way of persuading outsiders while leaving the professionals obdurate. How often have philosophical critics of the sciences convinced themselves that the use of certain notions, such as the atom, was "illegitimate," without hindering the fruitful employment of such notions in the science itself! Professional obdurateness may be only a bad habit or a consequence of vested interests. It is likely, however, that a genuine need is exhibited in the use of these "forbidden" notions, although the scientist himself may be altogether incompetent to offer the rationale for their use. One need only mention the name of Eddington or Jeans to illustrate the incompetence. And it is also likely that certain notions are forbidden, because a new dogmatism is substituted for an old one. It is the function of philosophy to analyse and interpret, not to legislate out of existence. It is safe to say therefore that the "actual infinite" and other mooted ideas will be abandoned, by professional mathematicians at any rate, only under the circumstances that the infinitesimals have been thrown into the discard: when it has been shown that nowhere does mathematical analysis require the actual infinite, or when the apparent use of the concept can be interpreted in terms of other, if more cumbersome, procedures.

It is the thesis of Kaufmann's very interesting though by no

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means completely convincing book that just this can in fact be done. And because the thesis is so important and has received so little hearing, I shall confine myself in this review to a fairly full exposition of its main points. The notion of the "actual infinite" has arisen, Kaufmann believes, because the symbolic operations upon symbols which the mathematician performs have been misinterpreted and extended to domains where they are not defined. In substance, he is at one with the finitist view that ordinal notions are logically prior to cardinal numbers, that "infinite denumerable classes" can be employed without danger if "class" is properly interpreted, but that non-denumerable totalities and all theorems pertaining to them can have no place in a critically conscious mathematics. But it is Kaufmann's great merit to have developed these points without subscribing to other extreme and mistaken views of Brouwer, e.g., that the subject-matter of mathematics is the mental activity of the mathematician and that therefore the principle of excluded middle must be dropped; or that the *Entscheidungsproblem*, whether what are usually regarded as determinate problems have a determinate answer, is to be decided (strangely enough) in the negative.

Kaufmann centers his criticism upon the traditional notion of "class." The essence of the traditional view is that any collection of entities which have a "common property" is a class. He takes as his own the intuitionist thesis that "constructions" must replace postulation; that by a class in mathematics is to be understood a rule or procedure; that existence theorems which do not indicate the rule for determining or "constructing" a set of integers must be abandoned; and he justifies these dicta by borrowing from Husserl the "principle of transcendental idealism" according to which there can be no fundamentally unknowable facts. But surely these principles can not be regarded as characteristic of phenomenology, and they have been fundamental to philosophies at great variance in other ways with Husserl's school. Unfortunately, however, an adequate analysis of what is to be understood by the "knowable" or the "constructible" in mathematics has never been made. The lack is serious, and Brouwer's claim that mathematics is to be made up of "constructions" has therefore been dismissed by unsympathetic critics as unwarranted prejudice and subjectivism. Yet in fact the thesis of Whitehead and Russell that mathematics is logic, is in a sense a constructivist thesis, in which the primitives of logic are the intuited elements in terms of which all of mathematics is to be defined. The difference is that Kaufmann and the Brouwerians take the integers as the most assured intuited elements. In this, however, Whitehead and Russell, as well as Kaufmann, Brouwer, and Hilbert, are surprisingly *naïve* and unsatisfactory. Their quarrel

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then becomes an interminable opposition between different prejudices, and the one genuine point at issue, whether premises which are logically prior in mathematics are also those on which we base our confidence in mathematics, is never fought out.

Kaufmann calls attention to an important distinction, which when translated into W. E. Johnson's language, points to the difference between a determinable and its determinate forms on the one hand, and a determinable and an instance of it on the other. On Kaufmann's view every integer is an ultimate determinate form of a determinable, and we must not suppose that we are dealing with the same sort of relation when we employ the phrases "properties or groups of spatio-temporal individuals" and "properties or groups of integers." He shows rather convincingly that transfinite cardinals are obtained by employing the latter phrase in the same sense as the former is employed, thus convicting the notion of transfinite cardinal of being nonsense. It follows that existence theorems of the form "there is a number which has the property $P$" can mean only an occasion or empty form for determining the determinate form of some determinable; and the phrase "there is" must not be taken to indicate a selection from an infinite aggregate of "individual" numbers.

Naturally enough, it is the counting process which on this view is the *fons et origo* of all mathematics. The integers are defined, very much as by Peano, as the formal structures of an unlimited counting process, so that the logical structure involved in the possible unchecked continuance of the counting process is precisely to what the notion of an infinite series of integers is equivalent. Hence the infinite series of integers is not an "actual totality" of individuals; nor an "actual becoming," since the temporal element in counting has been abstracted away; it is rather the domain or possibility of application of the formal structure exhibited in counting. An immediate consequence is that cardinal numbers can not be defined independently of ordinals, and that the cardinal number is what remains invariant when a collection is matched in some determinate way with a set of standard marks, e.g., the numerals. Cardinals must not therefore be hypostatized into "objects of a higher order"; they have not a mode of being independent of *all* operations of matching, although, since cardinals are invariants, they are independent of *any one* such operation. Hence the cardinal number of a class can not be the class of similar classes; it is simply the invariant under the matching or ordering operation. Everything depends, therefore, upon replacing the notion of class as a *collection* of objects having a common property by the notion of class as a *process* involving certain objects. When that is done, it is evident that the phrase "the class of all sub-classes of the class of integers,"

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a concept very fundamental in defining the higher transfinite cardinals in classical *Mengenlehre*, is altogether meaningless.

It is not difficult for Kaufmann to show, by using long established analyses, that symbols representing fractional, negative, and irrational "numbers" are all incomplete symbols, so that they do not represent additional kinds of entities, but indicate determinate operations on integers. As a consequence, the well-known difficulties with "irrationals of higher type" no longer arise, and the axiom of reducibility is not required. And that, certainly, is a powerful recommendation for this approach. But the theorems concerning the continuum do not all lend themselves to such an "operational" analysis, and many of them must therefore be rejected. Thus, since the cardinal numbers have been defined as the invariants under certain ordering operations, it is meaningless to talk of the cardinal number of *all* the integers. For we can not in fact operate with infinite collections as we do with finite ones, and when we think we are operating with "infinite totalities" we are simply drawing the logical consequences from the rules of their construction. On Kaufmann's analysis, the usual interpretation of the proof that the integers can be set into one-one correspondence with a "proper part" of themselves, is therefore faulty. What the proof shows is that for every one of the integers there is, say, a corresponding even integer; to say that the "class of all integers" is similar to the "class of all even integers" must mean simply this correspondence. The proof must not be interpreted in terms of infinite "totalities," i.e., the "class of integers" must not be taken in extension, since the proof follows from the operational definition of classes, not from the rejected classical one. The infinite as a totality is thus a *façon de parler* which can always be given an unambiguous constructive reading only when the infinite is of the "denumerable" type. Ordinal notions are therefore of the very warp and woof of "infinite classes"; a "set" can not be "given" as an unordered totality for which a law is subsequently discovered; and "non-denumberable" sets must be a meaningless phrase.

But what about Cantor's diagonal proof that the "totality" of endless decimals is non-denumerable? Kaufmann tries to show that it proves nothing of the kind. And his reasons for doing so should be familiar by now: since the totality of the numbers in the continuum does not permit a constructive interpretation, such a "totality" depends upon using "class" in the rejected sense. Instead of proving that the continuum is non-denumerable, the diagonal "proof" shows that the "totality" of endless decimals can not be defined on the basis of a determinate procedure. Indeed, if an endless decimal is taken as a symbol for a denumerable set of integers "generated" by a rule, the diagonal proof simply indicates how,

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from any denumerable set of denumerable sets of integers (i.e., the square array), *other* denumerable sets of integers can be obtained. It is the rejected sense of "class" which is at the bottom of the notion of "all endless decimals," and the bad habit of employing "class" in this sense is no doubt fostered by our apparent intuition of the linear continuum in geometry. If the "totality of endless decimals" is ruled out from mathematics, what remains of Cantor's work is the diagonal procedure and its consequences which do not involve the use of the rejected sense of "class," and the theory of well-ordered series as applied to denumerable sets.

To all of which a Cantorian may reply: "*If* you postulate that classes must be defined constructively (assuming that you can give an acceptable account of constructive definitions) it does indeed follow that non-denumerable sets are tabu. But why should I accept this postulate? I know, of course, that certain contradictions result if the old sense of class is retained. Nevertheless, the old sense of class does enable me to develop a very exciting branch of mathematics, and I shall try with all my might to guard against the contradictions. Indeed, in part I have already succeeded. I accept the non-constructive use of class, because I can develop a far-reaching and consistent doctrine. If "mere consistency" does not please you, so much the worse for your prejudices. So begone with your prohibitions!"

But, however this may be, the complete acceptance of Kaufmann's analysis must wait upon the detailed working out of his suggestions for the various portions of mathematics. Ideas on these matters are still in the flux, and it is to be noted that no systematic treatise has been produced by followers of Brouwer. It is easy, but also dangerous, to dismiss the finitist claims as inchoate and absurd. Kaufmann's book does indicate, however, the great promise of this position, and no student of the foundations of mathematics can afford to neglect it.

Dingler's latest book is of much less merit, and consists in showing that the voluntaristic apriorism which he represents can account for the formal sciences of logic and arithmetic. Dingler's philosophy coincides in part with American instrumentalism, and it is somewhat ironical that he is apparently not read in this country. It is true that he has an unfortunate manner of claiming to have anticipated everybody and of publishing each of his numerous books with the air of "now-the-truth-is-finally-revealed." But he has some very interesting suggestions for interpreting the propositions of logic and mathematics as symbolized plans of action, and as prescriptions for controlling the flux in the interest of "preserving the race." This thesis is most clearly stated in a preceding book, *Das System*, but it

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is central to the present work as well, and on the basis of it he offers some searching criticisms of Russell, Carnap, and other formalists.

Dingler's chief concern is with the relation of the abstract formulae of mathematics and logic to the qualitative common day world, a question which he rightly asserts to have been left unanswered by Hilbert and others. Since the control of the flux requires a set of unambiguous, univocal concepts, each of which is a plan of action, the three so-called laws of thought are employed to define the univocality of a concept. Hence the laws of thought represent our resolutions to construct determinate modes of action, and they are grounded in man's phenomenal *will* to be rational, i.e., to dominate his environment. The entire rational "account" of nature, on this view, is nothing but a system of directed operations.

Such directed operations require precision, however, and they are therefore symbolized by a set of marks so devised that they are capable of being treated as a calculus. But a calculus can be developed only at a rather advanced stage of thought, when all kinds of relations have been discriminated by *manipulating* physical bodies. The marks symbolizing these operations can now be treated on their own account, and the laws of thought employed to define unambiguously marks of different complexity. Nevertheless, as Dingler correctly points out, it is a complete mistake to convert the possibility of such a self-contained treatment of marks into a Platonic metaphysics, and to believe that any such calculus, say a logistic system, is more fundamental than any other discipline. What is fundamental, according to Dingler, is the whole procedure employed in making our ideas determinate. Hence the position of Carnap, that all we can know of nature is its formal structure expressible in purely logical terms, must be mistaken; for those formal relations are the end-products of prior activity carried on in a qualitative world, and represent a temporal series of possible operations (pp. 65–74). The knowledge of relations with which logistic deals is determinate in virtue of our having performed all sorts of experiments; after we have won them by arduous work it is easy to employ them in a calculus. Only if that prior activity is neglected, is it at all plausible to postulate a realm of self-subsisting relations. Similar remarks hold for Russell's class interpretation of number. Thus all of Dingler's criticisms have their source in his insistence that scientific objects are manufactured (i.e., *made* determinate) and are not found ready made.

It is obvious that arithmetic as a calculus can be defined in terms of manipulating marks on paper, and Dingler shows in detail how this can be done. Infinite series are defined as the domain of possible mark-productions, so that on his view also infinite totalities can not be defined as "given" or "actual." However, his "proof" that the

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formal calculus he thus obtains is consistent depends on his employing the notion of "any mark"; and it is clear that he must thus admit the introduction of the denumberable infinite. He finally offers a very curious formal treatment of infinite series in which quantitative notions and the concept of limit are not employed. Hence Dingler is unable, on the basis of the procedure of this book at any rate, to deal with the usual questions about infinite series, e.g., convergence, and most of the mooted points in the contemporary controversy in mathematics are necessarily excluded from consideration.

In spite of the suggestiveness of many of Dingler's remarks, his main contention is never established. If the "laws of thought" are grounded in our will to be unambiguous, how is it that they of necessity turn up on every hand? Is it not because the laws refer not to our resolutions, or at any rate not *only* to our resolutions, but to the formal traits of things? And if they do so refer, must not other logical principles be placed on the same plane as the three laws? And is anything gained by substituting the order in which we get our knowledge for the order which is revealed when we do finally manage to know? Moreover, Dingler wishes to find a basis for scientific procedure which is to serve as an absolute material *a priori*, and which is to be subject to no modifications in the light of increasing knowledge. That is the *raison d'être* for his insistence that Euclidean geometry is the only possible unambiguous way for coördinating our experience of spatial relations, or that mechanics, and in particular Newton's system, is the only univocal foundation for physics. To go the way of Dingler in these respects is to go counter to everything that may be learned from the history of science. For science is undeniably circular, and renounces in its practise any theory of science which asserts that we must begin with indubitable principles. Science is circular in the sense that it employs principles to interpret the "given," and yet the "given" is used to suggest and verify the principles. It is therefore not absurd to develop a theory on the basis of certain assumptions, say concerning geometry, and then to revise those assumptions in the light of the theory. In the interest of winning security against every future alteration in the structure of science, Dingler has accepted a dogmatism which is as sterile as it is unconvincing.

Hofmann's essay is a reprint from the *Kant Studien*. It has all the faults and virtues of the method which expects to throw light upon problems of specific subject-matter by examining the relations of subject to object and the variations upon that familiar tune. In spite of this approach, however, Hofmann makes the valid point that the principle of the excluded middle is applicable only if the alternatives considered are each significant for the subject-matter examined.

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The sentence "Christmas is blue" is without significance, because types or categories are confounded; and the sentence "Christmas is either blue or not blue" is equally without sense, and not a significant application of the principle. The principle does express correctly the nature of all determinate characters as such; but unreflective application of the principle may nonetheless produce nonsense. Hofmann therefore believes that in so far as a character of some possible object is not involved in the constructive rule which defines a series of such objects, it is not true that such a series either does or does not possess such a character. Hence he concludes with Brouwer that since an infinite series can not be determined in all of its characters by a constructive rule, the principle of excluded middle is not always applicable. All of which, in the absence of an analysis of "constructive rule" is saying very little indeed.

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*Scientific Inference.* HAROLD JEFFREYS. New York: The Macmillan Co. 1931. vii + 247 pp.

The series of great books by Duhem, Campbell, Mach, Poincaré, are examples of what may be done on those rare occasions when scientists of unusual competence become interested in the logic of scientific method. This volume by Dr. Jeffreys, whose special interest is geophysics and who has behind him a first-rate work on *The Earth,* naturally raised high expectations. Unfortunately, physicists sometimes read what philosophers have to say about the logic of physics, so that their own writings often merely fill out with illustrations the outline of arguments suggested by their reading. But while the book under review does not quite fall into this class, its fundamental positions are borrowed from other thinkers without adequate criticism. In spite of many interesting observations which it contains, as a contribution toward understanding the nature of scientific inference, the book is very disappointing.

Although Jeffreys had started from the phenomenalistic position of Mach, he has become convinced that pure phenomenalism is inadequate for scientific needs, and in this book he aims to show "how it is possible to learn from experience and to make inferences from it beyond the data directly known by sensation." Vestiges of an extreme subjectivism still remain, however, even in the formulation of his aim. But inferences about matters of fact can only be probable, never certain, so that Jeffreys recognizes that the nature of probability is central for a theory of scientific inference. He starts out quite bravely with an objective relativistic theory of probability, so that a proposition has to a given set of data one and only one probability relation, to which moreover a real number may be assigned.

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It is this "relation" of a proposition to the data which is crucial. Jeffreys maintains with Keynes that this unique probability relation is immediately recognizable under suitable conditions, just as force or color are. Precisely why it is that with the possible exception of authors of books on probability who maintain such a view, no one seems to be able to intuit these probability relations, does not seem to concern Jeffreys. Neither does he indicate what is the significance of irrational numerical values of probabilities, nor how such values are obtainable on the basis of a direct intuition of the probability relation.

But the acid test for an author's views on probability can be found in what he does with Bayes' theorem. No one, of course, can take exception to this formula as a theorem in pure mathematics. Its use to estimate the "probability of causes," however, in most cases depends upon introducing questionable assumptions about equiprobability; and in such cases the probability relation, in spite of a great show of objectivity at the start, soon reduces to a function of our ignorance. And that in fact is just what the theory of Jeffreys does reduce to. For he must employ the notion of a "prior probability" of a theory,—prior, that is, to any verification, and relative therefore to our complete lack of knowledge. Jeffreys admits that the presence in Bayes' formula of functions indicating prior probabilities, has been the standing objection to it. But he thinks he removes the difficulty by the following argument: "It has often been said that assessing a probability implies some knowledge, and that therefore we cannot assign a probability when we are in complete ignorance. This opinion must be directly contradicted. Complete ignorance *is* a state of knowledge, just as much as a statement that a vessel is empty is a statement of how much there is in it. . . . If we have no means of choosing between alternatives, the probabilities attached to the alternatives are equal" (p. 20). Thus we are asked to raise ourselves by our own bootstraps and to get knowledge by bandying words. For Jeffreys' argument—that if we believe we can learn from experience we must accept this assumption about equiprobability—is a complete *non sequitur* (p. 21): to deny that the probabilities of alternatives are equal when we are ignorant about them does *not* deny the possibility of our discovering something about them. There is, of course, a fundamental issue involved. The issue is whether there is any intelligible sense in which a theory may be said to have a prior probability, and whether the proposition that we are ignorant may serve as a premise for inferring another proposition asserting some matters of fact. And if the answer is negative, we must abandon not only Jeffreys' use of Bayes' theorem and Laplace's succession formulae, but also his analysis of the nature of the probability relation.

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In the chapter on quantitative laws, Jeffreys shows clearly that a law adopted to explain a set of observations is only one of a possible number of laws that would fit the data as well. Why do we adopt the law that we do? Jeffreys tries to show that it is the "simple" law which is always chosen, because such a law has a greater prior probability of being true than other laws. Simplicity in a law, he argues, is a better guarantee of probability than accuracy of fit (p. 40). Assuming that every quantitative law can be expressed as a differential equation of finite order and degree having integral numerical coefficients, Jeffreys groups these equations so that those with equal values of the sum of the order, degree, and absolute value of the coefficients are classed together. The increasing value of this sum defines the increasing complexity of the laws. The entire argument, however, rests on the assumption that the probability of a verified consequence is the same on each of the laws of a certain type (p. 39). But isn't it just a little too much to ask of our supposed sense for intuiting probability relations, that it should be capable of examining *all* laws (an infinite number) of a certain type, and of judging that the probability of the observed facts is the *same* on all such laws? Moreover, Jeffreys' criterion of simplicity is deceptively simple. For it is easy to see that by introducing a different coördinate system the value of the sum in question can be transformed into any value one chooses, and the "simplicity" of a law turns out to be a matter of employing the proper notation. Unless a criterion of simplicity can be offered which is free from psychologic considerations, it is absurd to associate a (presumably objective) probability value with degrees of simplicity. But how could Jeffreys decide on the basis of his criterion between the relative simplicity of two systems of equations which involve different coördinate schemes? As it is, he offers the most astounding argument for the theory of relativity: Since Hamilton's principle expresses the independence of physical laws from the system of coördinates employed, by the simplicity postulate we are entitled to say that it has a high prior probability; but the general relativity theory expresses the same sort of independence; consequently, relativity theory is *a priori* highly probable! (p. 188). It is difficult to believe, however, that such considerations form any part of the evidence for accepting the theory.

In spite of the questionable nature of the central doctrines of this book, Jeffreys has some very illuminating comments on a number of independent topics. His discussion of "irrefutable" hypotheses (pp. 3, 40), of the difference between induction and deduction (p. 5), of the theoretical basis of "observations" (p. 53), and of the conditions for satisfactory definitions (pp. 111, 131) are well worth reading. His comment on Russell's epistemology is to the point (p. 226), and for readers familiar with the calculus there is an unusually clear

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analysis of the sense in which physical laws may be regarded as invariants (pp. 102–103). But the inclusion of much of the material into this book must be set down to bad judgment. The chapter on errors is highly technical and contains a curious and contradictory account of "true values" which Jeffreys believes to be "unknowable" (pp. 53, 105); two chapters on measurement are succinctly done, but suffer because of an inadequate discussion of the process of *physical addition;* and two long chapters, one on Newtonian dynamics, the other on light and relativity, are good accounts, but will hardly be intelligible to the novice for whom some of the other chapters are intended. Jeffreys offers a brief criticism of frequency theories of probability (pp. 219–221), but this gains its chief force from demanding of them what no theory can supply—*certain* knowledge of general propositions dealing with matters of fact.

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*Philosophy and Civilization.* JOHN DEWEY. New York: Minton, Balch & Company. 1932. Pp. vii + 334.

In a dozen and a half essays on widely different subjects written over a period of years for diverse occasions one does not expect the unity of a treatise. And yet there is detectable here, without much straining, a single theme—a theme which seems to indicate that pragmatism remains as it began more hospitable to idealism than to the newer realistic tendencies. This theme is generalized best perhaps in Dewey's Howison lecture for 1930, *Context and Thought*—which the editors have asked me to include in this review. Thought is neither analysis nor synthesis, nor is it analysis followed by synthesis; but it is analysis inside a moving context. As this context is inevitable, it should be counted significant. Indeed to think that one can tease out ultimate elements that themselves are independent "simples" of being is, under the lure of simplicity, to harbor a great illusion. This way lies sterility—and realism. The elements whereby thought operates are always and ever elements of a context that conditions the eventuation as it does the initiation of intelligence.

In this orientation all the essays fit, some of course more closely than others. In the valuable early article on "Interpretation of the Savage Mind," which many students will be glad to have in this more accessible form, after criticizing Spencer and others for ignoring its actual locus in interpreting the savage mind, Dewey lucidly parades the primitive mentality as context for sophisticated intelligence. "The Practical Character of Reality" and "Qualitative Thought" make colorful the context of intelligence by putting into it the qualities common sense seems to find there. The briefer essay on "Affective Thought" reinforces this conception by an appreci-

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ation of art, using painting for purpose of illustration. "The Inclusive Philosophic Idea" defends "social" as the most fruitful category to cover the context of thought as a whole. "Corporate Personality" is an excursion into one sub-category that has been used in both legal and political science to further or to frustrate the "social" as human. "The Unity of Behavior," "Conduct and Experience in Psychology," and "Body and Mind" seek to reëstablish continuity across one great historical dualism. "A Naturalistic Theory of Sense Perception" and "Perception and Organic Action" deal with this problem at its lowest perceptual level and seek by more detailed analysis to make out against epistemology the case outlined in "The Practical Character of Reality," where this popular realistic diversion is damned as a "species of confirmed intellectual lock-jaw." "Appearing and Appearance" and the two legal essays, "Logical Method and Law" and "Nature and Reason in Law," indicate in different domains how thinking actually bridges the breaches that arise in experience, not metaphysically but episodically. The latter essays carry the pragmatic teleology into a field where, but for Mr. Justice Holmes, it has been largely lacking, and seek to make consideration of consequences rather than merely of precedents the *sine qua non* of legal intelligence. The closing essay, "Science and Society," the only one here published for the first time, argues the impossibility of curing the technological ills of a scientific society save with more science and the consequent necessity of conquering the social fields by and for the scientific method. "The Development of American Pragmatism," important enough to justify this second appearance in English, indicates Dewey's conception of the major contributions to this movement—of James's (setting out from English empiricism), of Peirce's (setting out from Kant), and of his own (setting out from Hegel).

The essay "Philosophies of Freedom" attempts fruitfully to connect the older conception of freedom of the will with what the determinists at least since Locke have called the freedom of the man. From the former Dewey salvages as compatible with his emphasis upon continuity "a capacity for deliberately changing preferences. From the latter he borrows "power to act in accordance with choice." He draws these two together in every "trend of conduct that causes choices to be more diversified and flexible, more plastic and more cognizant of their own meaning, while it enlarges their range of unimpeded operation." This possible convergence of the two ideals forms Dewey's third, and own, philosophy of freedom, and constitutes for him the goal of social organization and all enlightened education. The problem of freedom becomes thus a practical rather than a dialectical matter, and one contingent more upon the future

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than upon the past. In short, "freedom is a resolute will operating in a world in some respects indeterminate, because open and moving toward a new future."

This persisting sense of a complex whole indicates anew Dewey's practice of the Hegelian method to achieve results of his own. One position is set against another, like antithesis to thesis, and out of these Dewey brings a resultant that is neither, and is yet the best of both. The two historic views of freedom he combines to correct each by the other and to produce an improved third. The triad that everywhere runs through his problems is (1) antecedents and (2) consequents separated and yet connected by (3) strictly unique qualities or individualities that are the consequences of antecedents and the antecedents of their own consequences without ever being exhausted by the one or exhausting themselves in the other. There emerges from the interstices of these relations—which relations it is the business of science to investigate—qualities mutually incomparable, each of which by its uniqueness at once transcends the reach of science and yet constitutes the final justification of scientific analysis. This Hegelian method with pluralistic outcome is advantageous for exposition, but it presents great obstacles to fruitful discussion. Particularly against the realistic preoccupation with the unanalyzably unique, Dewey points to the conditions or results of the unique as crucial for thought. In fact, it sometimes appears (I am thinking of the value argument with Prall and others, though, I fancy, it is also to be found in the earlier argument with McGilvary and the later one with Lovejoy) that Dewey is so devoted an apostle of the whole as always to feel some other part of any given total-situation more important than the part which his opponent emphasizes, and this in no sense from a spirit of contrariety but from a felt necessity of defending the whole by espousing as alone completely relevant the part or parts that in a given case are being overlooked.

Indeed is it not just this devotion to the spirit of the whole, which can never be fully realized in social and economic practice, that has helped instrumentalism under Dewey's generalship to an eventuation surprising to many—to the view that philosophy is concerned with meaning rather than with truth? Primarily, if not indeed only, in art does one get a self-sufficing total-situation. "The full realization," as Dewey himself so well puts it in the essay "Body and Mind," "of the integration of mind and body in action waits upon the reunion of philosophy and science in art, above all in the supreme art, the art of education." The last phrase shows still the predilection to achieve the end of science in the social sphere, and the differential hope of its possibility among the plastic young. But the

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first essay, from which the book is named, generalized for the international congress at Harvard this view, i.e., that "meaning is wider in scope as well as more precious in value than is truth, and philosophy is occupied with meaning rather than with truth." Truth is not thereby renounced, indeed is acclaimed indispensable, but after being defined is turned over to science; and "scientific thought itself is finally but a function of the imagination in enriching life with the significance of things."

And this the eventuation for instrumentalism, a movement so frequently interpreted as preoccupied with the logic of means rather than with the appreciation of ends! I remark it not to censure, but to clarify. It ought at last to make unmistakably clear that the pragmatic movement, rising with Peirce its author and Dewey its founder out of idealism, is axiological in motivation. Its interest in means is itself but a means to its interest in ends. Its emphasis upon experience is methodological rather than metaphysical. Negatively, it appears in these background essays as a method of dismissing from philosophy the question as to the nature of things; and, positively, it becomes a locative gesture for the guidance of appreciation. Though Dewey's occupation in these essays is characteristically with method, his preoccupation here, as elsewhere, is with appreciation.

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*Property.* Ernest Beaglehole. New York: The Macmillan Company. 1932. 327 pp.

This excellent monograph is a pioneer "excursus into the border-country lying between psychology and sociology," which should help to provide a much-needed background for future social philosophizing about the ever-acute problem of man and his possessions. It forms the first of a series of Studies in Political Science and Sociology under the editorship of Professors Morris Ginsberg and Harold J. Laski of the London School of Economics. Its approach is wholly anthropological-psychological, "using every fruitful method" of those sciences in the attempt "to lay bare the hidden nerve of irrational animism that binds the individual to the object he appropriates as his own and defends against aggression."

Since the "guiding thesis" of the inquiry is "the assumption of the fundamental unity and solidarity of all animal life," Part I undertakes a survey of available data on property among insects, birds, rodents, and apes. Taking as the mark of interest in property its defense by animals against aggression or spoliation by others, Mr. Beaglehole finds animal property to be limited virtually

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to the storing of food by a few species against climatic emergencies, plus a certain amount of collecting motivated by curiosity and esthetic considerations. In spite of many opinions to the contrary, he contends that there is no real parallel, but merely an "apparent likeness," to be found in the acquisitive behavior of men and the lower animals. And "the biological facts are too complex to be explained away in terms of an innate acquisitive tendency." The author significantly adds: "One is sometimes inclined to wonder how many more of McDougall's instincts would survive an equally rigid biological examination?"

Part II deals with the building up of sentiments and unconscious behavior-patterns among the so-called Simpler Peoples, with chapters on Magic, Animism, and Property Values; Sentiments of Ownership in Savage Society; and the Social Patterning of Property Values. Here the author assembles and utilizes a wealth of recently-acquired anthropological knowledge from many sources. It is notable, in view of the recent expansion of interest in the Theory of Value, that he concludes that "the fundamental problems in any consideration of the psychology of property are to be found in the origin and integration of values." Great emphasis is rightly laid upon the non-rational motives in the determination of value, and the preponderant influence of unconsciously adopted social patterns in the "canalization" of economic behavior. Also included in this part are a number of valuable tables summarized from Hobhouse, Wheeler, and Ginsberg's *The Simpler Peoples,* showing the comparative ownership-practices of the principal savage tribes.

Part III has a more miscellaneous character, dealing as it does with various aspects of property in the light of individual psychology: the child's sense of property; its rôle in the development of personality; abnormal property-behavior such as kleptomania; and its alleged, but rejected, Freudian explanation. As the discussion of property reaches the higher levels of intelligence, it becomes increasingly evident that "it is the moulding of human nature by the culture patterns of the different groups which adapts one child to a communist organization of society and another to a Western capitalist society." In the beginning there is no "single unitary soul or ready-made self." The idea of self "is a human construction, an hypothesis, as it were (and, like all hypotheses, never complete but always open to change), whereby, through the selective handling of environmental situations, the implicit underlying conational unity of the self is rendered relatively clear and explicit. This process of development results from the integration of emotional dispositions into stable systems of sentiment grouped about significant focal objects and ideas." The author's comments upon the "shrinkages of personality" due to property losses have a melancholy timeliness

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in 1932, just as his notes on corresponding "enlargements and extensions" would have made good reading in 1929.

Throughout the book Mr. Beaglehole's interpretation of man's relation to property objects is soundly functional, so that in his opinion the right to property, as with Hobhouse and Laski, must be conceived as the claim of an individual upon society for "such conditions as are necessary for the realization of his functions." No one can lay down a hard and fast rule about the amount of property, beyond a certain obvious minimum, that will satisfy our needs for security and freedom. The right of property is "indefeasible and unchanging just to the degree that if the individual does not enjoy permanent control of those end-objects satisfying certain of the fundamental needs he will live a thwarted life." Beyond that point, a wide field of debate opens, for which the author furnishes abundant ammunition, but which he does not choose to enter in his capacity of social psychologist. Would that his example were more frequently followed! The book contains a good index and bibliographical note; but the author considers the time as yet unripe for a complete bibliography of the psychology of property.

HAROLD A. LARRABEE.

UNION COLLEGE.

*Sociologues d'hier et d'aujourd'hui.* GEORGES DAVY. Paris. Félix Alcan. 1931. 308 pp.

The five parts of this book have all appeared separately in periodicals, and are reprinted together in order to present a panorama of contemporary French *sociologie* and its immediate antecedents. Of the "essential doctrine" of this "essentially French science," that of Durkheim, however, the author does not pretend to offer a complete account, reserving that task for a later volume.

His introductory essay, dealing with the years 1918–1925, is already familiar to readers of the *Monist,* where it first appeared. Six chapters are devoted to a demonstration of the debt owed by contemporary sociologists (in the French sense) to Espinas, in spite of the latter's arbitrary insistence upon annexing the new science to evolutionary biology. For it was the "*organicisme intégral*" of Espinas which paved the way for Durkheim and the famous "*conscience collective.*" Professor Davy does the latter the service of collecting his scattered pronouncements regarding the family and kinship. From these it appears that, far from deriving society from the family, Durkheim attempted just the reverse,—to show that the family was not a natural grouping but a product of society, an institution the origins of which must be sought in the totemic clan. All types of families are social groupings about powers regarded as

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superior to the individual members, and the problem of the family is ever that of discovering what social forces continue, each day less successfully, to keep its component parts together.

Of more immediate interest are the thirty pages in which Professor Davy contrasts the alleged social psychology of William McDougall with the *sociologie* of Durkheim to the marked advantage of the last-named. It appears that McDougall is not even a true social psychologist, but a devotee of individual psychology who has subsequently turned his attention to social problems. Thus to begin with that notorious abstraction, the isolated individual, is to commit an irreparable blunder. Study first of all the mentality of the group, and then the mentality of the individual within it; but never the reverse. To its firm grasping of this truth the French approach to the problems of psychology owes its superiority. Professor Davy sees signs that McDougall recognizes the error of his ways, and is not far from salvation. As for the latter's doctrine of the group mind, it is apparently none other than the *conscience collective* of Durkheim and Lévy-Bruhl. But a closer examination reveals differences between the two, both in inspiration and in final import. McDougall, wavering eclectically between individualism and *sociologisme*, takes his departure, like Espinas, from Darwinian organicism, but is forced to build up his group mentalities from individual members in a vain attempt, the author claims, "to reconcile Spencer and Rousseau." Although his faulty methodology causes him to be guilty of "imprecisions, indecisions and even contradictions," many of McDougall's conclusions are in accord with those of Durkheim's school, and in company with the author we may scent the presence of a number of mere *querelles de mots.*

The concluding hundred pages contain a masterly and sympathetic summary of the three well-known books by Professor Lévy-Bruhl dealing with primitive mentality and constituting a "veritable sociology" by themselves. It is not always realized that Durkheim and Lévy-Bruhl give widely divergent interpretations of primitive thought as related to our own. In the apt metaphor of Professor Bouglé, while Lévy-Bruhl digs trenches to separate the two, Durkheim multiplies bridges to connect them. The author is less concerned to reconcile than simply to exhibit the differences between Durkheim's "dualism of superposition" and Lévy-Bruhl's "dualism of divergence." For, given the requisite methodological orthodoxy for entrance purposes, are there not many mansions in the Gallic heaven of *sociologie*?

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*Proceedings of the Aristotelian Society.* New Series, Volume XXXI, 1930–1931. London: Harrison & Sons. Pp. 312.

This is one of the less interesting Aristotelian volumes, to a reader on this side of the Atlantic. Any good graduate seminar in philosophy would produce as notable work in the course of a year. We would not say there are no things of value in the volume. Thus we may mention the "In Memoriam—Herbert Wildon Carr," by Miss Hilda Oakeley. Carr is quoted as having said: "I have lived to see the leading exponents of pure science reproached as idealist philosophers." It is good to have so sympathetic an account of one who was a real lover of philosophy. The Presidential Address, by Professor Beatrice Edgell, grapples once again with the difficult question of the nature of "Images." But most of the papers either repeat what the authors have said as well elsewhere, or stop on the verge of saying anything novel, even Mr. Schiller, who writes about novelty.

TRINITY COLLEGE, HARTFORD. HARRY T. COSTELLO.

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## JOURNALS AND NEW BOOKS

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THE AUSTRALASIAN JOURNAL OF PSYCHOLOGY AND PHILOSOPHY. Vol. X, No. 2. The Place of Hegel in the History of Philosophy:

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Revue Philosophique. 57e Année, Nos. 7 et 8. Une philosophie de la contrariété. Fr. Paulhan: *J. De Gaultier.* Ordre et durée: *J. Nogué.* La connaissance comme fait physique: *R. Ruyer.*

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## NOTES AND NEWS

Two prizes of £50 each have been offered by a member of the British Institute of Philosophy for the best Essays on Nicolai Hartmann's *Ethics* (English Tr., published by George Allen & Unwin, Ltd., London) under the following conditions.

1. One prize to be open to men and women of British birth, wherever resident, under the age of 28; and one to men and women of American birth, wherever resident, under the age of 28.

2. The essays shall be of not less than 100 typewritten quarto pages.

3. They must be sent in before June 1st, 1933, addressed to the Director of Studies, The British Institute of Philosophy, University Hall, 14 Gordon Square, London, W. C. I, with addressed stamped envelope enclosed for their return to the writers.

4. The prizes shall only be assigned on condition of the attainment of a certain standard by the selected essays.

5. The selection shall be made by the Academic Committee of the British Institute of Philosophy.

J. H. Muirhead,
Chairman of the British Institute of Philosophy.

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# The Journal of Philosophy

## CONTINGENCY AND THE NEW ERA IN METAPHYSICS (I)

In the lively current debate over the question of determinism and the relation of this long-standing philosophical issue to the new concepts of physics, one requisite, if the writer is not mistaken, is almost universally neglected. This is a careful restatement of the state of this "ancient problem" *prior* to the recent discoveries of physics. Such a restatement is required for two reasons. On the one hand, the failure of the mere physical facts to produce agreement, among either philosophers or physicists, regarding the ontological bearings of the "Uncertainty Principle" shows that the question is still a philosophical one, and this suggests that treatment of it in distinguished philosophical writings antedating the enunciation of that principle may be more illuminating than recent debates centering too narrowly about the present state of physics. On the other hand, the history of philosophical determinism and of the doctrine logically contradictory to it seems, in some recent and important chapters at least, yet to be written. It is too little realized, above all, that the last fifty years have seen a revolution in ways of regarding this problem, a revolution so profound as to constitute little less than a complete retreat from the major premiss of modern thought, the notion of absolute natural law. Of course the retreat is not complete, else there would be little need for this article, but the fact is that it would be hard to mention any concept in regard to which the most brilliant thinkers of recent times have differed more radically from those of one or two centuries earlier than this concept of law and its antithesis, chance.

Modern thought has passed through the following stages: the first, in which it confidently assumed the validity of the causal postulate, at least for physical nature, and spent its energies in endeavoring to deduce the ontological consequences; the second, in which it discovered that if the causal assumption is considered from the standpoint of the evidences adducible in its favor, only some rather heroic measure can save us from radical scepticism in its regard (Hume, Kant—the Post-Kantians and their still later followers uncritically accepting the results of Kant in this matter); the third, in which the more vigorous thinkers began to consider whether, quite apart from the dubious logic of the heroic measures in question, the whole ven-



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ture in absolutism represented by the notion of *strictly* invariant sequences was not an error more positively identifiable as such than by showing our embarrassing inability to prove it. This is the stage in which we now find ourselves, and we were well along in it not only before Heisenberg but before Einstein. In order to understand the situation, including the fact, previously alluded to, that the situation is rather commonly misunderstood, we must go back at least to the middle of the second stage, and particularly to the work of Hume.

It is not necessary to rehearse Hume's analysis. It is well known, even if, where convenient, frequently forgotten. The question I wish to raise is why it was possible, after so powerful a demonstration of the indemonstrability of the truth of strict causality, for this doctrine nevertheless to continue, for a century more, to rank as one of the few truths a philosopher should not fail to incorporate into his system, whatever else he excluded from it. The mere authority of the physicists, claiming natural law as the necessary presupposition of their science, is not, I believe, the sufficient explanation. At least three further factors tended to obscure the importance of Hume's achievement. (1) Hume's sceptical analysis obviously carried him in some directions too far; it was at once clear that if science were to be considered as, in the words of Mr. Whitehead, more than a fairy tale, *some* principle of the coherence of nature not furnished by Hume's philosophy must be admitted. (2) In *belief* Hume himself was a determinist; he did not in the least suppose that his discovery of the insufficient *evidence* for the truth of causality implied any revision of the concept of cause itself, its modification, for instance, into a practically sufficient notion of approximate regularity, such as, perhaps, could be demonstrated to obtain in the world. Ontologically cause remained for Hume absolute rigidity or necessity of sequence, separated by an equally absolute gulf from human knowing. On both counts the absolutism, the kernel of determinism, remained. (3) Finally Kant is traditionally credited with having "answered" Hume, with having discovered the principle of natural coherence referred to above. It seems to me time to recognize clearly that this alleged answer, if taken in a sense favorable to determinism, is definitely untenable. For, granting Kant's point that experience as such involves unity or coherence, he produces no real evidence whatever that this unity must be or involve *causal* unity in the absolutistic sense of invariant regularity. Nay more, taking his more specific point that experience of time would lose its irreversible order if causal law did not bind the succession of events completely by a rule of sequence, we must to-day insist that precisely the opposite has turned out to be true, since the concept of deterministic law is now admitted not only not to explain the irreversible character of time, but actually to contradict that character. The only laws of

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physics that have so far given physicists any inkling of an explanation of "time's arrow" are precisely those which are not stated as pieces of determinism, but as statistical approximations, such as Carnot's Principle. We have the best possible authorities for this view; to take one only, and that a physicist who seems concerned as few others to defend determinism, we find Max Planck, who appeals to Kant upon the general issue, nevertheless explicitly affirming and emphasizing the very point fatal to Kant's argument. According to Planck there are two great classes of laws, those which apply to reversible and those which apply to irreversible processes. Which, he asks, are the more fundamental; the answer being, the former, for they alone admit of interpretation as strictly binding, as exclusive of contingency or irregularity. Hence, concludes Planck, the direction of the world in time is not a basic feature of the world, since to make it so we must also accept the possibility of a contingency equally basic.[1] In short the defence of determinism is now driven to the exact opposite of a vital portion of Kant's defence of it, so far as time is concerned. And indeed the whole history of philosophy, Kant's included, supports the inference that to take time and the need for explaining it "seriously" is to break with determinism. From Aristotle to Peirce, Bergson, and Whitehead, the thinkers who have insisted upon an account of time which does not merely explain it away have been those who have eschewed causal necessity; from Spinoza to Kant, Schopenhauer, and Hegel or Bradley it is the thinkers whose theories of time leave its reality at least doubtful who have also been the most insistent upon the unreality of chance.

All this is not to deny great credit to Kant; for while he did not hit the nail on the head but rather, as one might say, on the pointed end, he did hit the nail: he did see that the problem of causality is essentially an aspect of the problem of time, and precisely this is what his predecessors, from Spinoza and Leibniz to Hume, had not seen.

Since Kant, and until somewhat recently, thinkers have tended to base determinism upon a more or less vague reliance upon Kant's argument, or upon a no less vague notion of the indispensability of the causal postulate in science, or upon an altogether hopelessly vague notion that the rationality of the universe depends upon it (a notion to which we shall return). Any careful reëxamination of the old issue, any really distinguished defence of determinism, the almost completely deterministic first three-quarters of the nineteenth century failed to produce. In view of the dubious logic—at the least, the really excessive obscurity—of Kant's, the only impressive attempt to meet the criticism of Hume, this careless treatment of the

[1] Max Planck, *The Universe in the Light of Modern Physics*, New York, 1931.

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problem after Kant is significant. It seems to mean that determinism had ceased to function except as a traditional dogma, persisting mainly through inertia and the supposed command of natural science.

The last quarter of the century brought a most remarkable change. Some, if not most, of the original thinkers, e.g., Boutroux, Peirce, James, Dewey, Hamelin, boldly announced themselves satisfied of the baselessness of determinism. Some of these men were obviously, like James, chiefly motivated by the psychological and moral aspects of the problem, and in so far their position was relatively traditional, inasmuch as indeterminism on such grounds had at all times found its defenders. But Hamelin was a metaphysician of mainly systematic and logical interests, and Peirce was primarily a scientist, mathematician, logician, and cosmologist, and a moralist or exponent of a philosophy of life only in the second instance. He was by all odds the most universally equipped authority on exact science in its relations to philosophy that had been seen since Leibniz, and equally the most original contributor to logic. Yet the concept of real chance is fully as vital to the technique of his system as that of necessity is to the systems of Spinoza or Kant. (It is interesting to note that a somewhat similarly universal mind of to-day, Professor Whitehead, allots an equally fundamental rôle to contingency.) Finally, the new tendency away from determinism was not confined to philosophers. The unsurpassed nineteenth-century scientist, Maxwell, had even earlier inconspicuously, but definitely, aligned himself on this side of the question.

It is not enough to-day, therefore, to ask ourselves whether the new physical results throw light on the "time-worn" controversy over contingency, but rather we must ask whether they throw light upon the profoundly new conception of this issue developed independently of quantum physics by the late nineteenth- and early twentieth-century philosophers of science. The failure so to put the question renders much current discussion anachronous. The philosophical as distinguished from the physical question, so far from being "time-worn," is so new that many seem as yet scarcely to have heard of it.

What are the distinctive traits of this new conception of the problem? On the negative side they may be summed up as the belated recognition, first of the utter inadequacy of *all* known evidences for the deterministic position, and second of the illusory character of the supposed advantages of the causal postulate taken frankly as an assumption (as for instance, the advantage of rendering the universe as conceived by us more intelligible or rational). On the positive side we find the corresponding contentions, first that the reality of contingency is open to direct verification, not so much

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in the feeling of human freedom, upon which all indeterminists have laid more or less stress, as in the experience of time; and second that for philosophy, apart from the supposed needs of physics, for philosophy considering her own problems of logic and metaphysics, the advantages of an assumption of real contingency are as genuine as those of the opposite assumption are illusory, and far more varied and profound than even the most ardent defenders of "free-will" had in past centuries been able to imagine. The change of standpoint was thus complete, and in this very completeness lies one of the reasons why this chapter of the history of thought has yet to be written. A further reason may be seen in the fact that the most significant contributors to the movement were French and American, so that the traditional emphasis even in America upon German and English philosophy, and the more or less ineradicable reluctance of Europeans to take intellectual America seriously, have hampered the full appreciation of the work done even in the two countries which have most contributed to it. The unfortunate failure of Peirce, whose thought contained all the characteristic notes of the new indeterminism, to publish his principal writings during his life-time (they are only now coming to light) was, of course, still another cause of neglect and misunderstanding.

The four traits of the new doctrine already mentioned deserve elaboration. Let us first consider the negative or destructive side. Upon Peirce as—doubtless unknown to him—upon Clerke Maxwell, it dawned that the conception of physical law was undergoing changes in physics itself which, as only prejudice could deny, at least radically complicated the traditional case for causality as the necessary methodological assumption of science. The newly discovered statistical nature of the laws applicable to certain processes suggested, as an idea at least worthy of further analysis, the hypothesis that the non-statistical laws owed this seemingly absolute character to nothing more than the fact that in certain cases statistical uniformities are so very great as, for our necessarily imperfect observations, to *simulate* absolute uniformity. Reflection further suggested that positive evidence against such an hypothesis must in the nature of the case forever elude us. The margin of error could never be proved not to conceal irregularity, and the margin of error could never be eradicated, even though perhaps (we shall discuss this presently) it could forever be diminished. Absolute regularity is thus not an empirically verifiable concept, and, as Maxwell said, can only be given a semblance of meaning by interpreting it theologically, by considering things as they might appear to omniscience. Here Maxwell's piety did not prevent him from declaring drily that "the conditions of divine omniscience" are not among the proper working conceptions of physics. The point, too, as Peirce was careful to

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insist, is not merely that we can never be certain that natural regularity is absolute, but that we can not even accord the least probability value to the assumption. Observation can render probable that the element of "wildness" which the believer in contingency holds to inhere in events does not, if it exists at all, exceed a certain amount; can drive it, that is to say, to take refuge below a given margin of error, and can diminish the margin; but, however small this refuge becomes, to a wildness of which the only requisite is that it shall be greater than zero it remains exactly as hospitable as ever. If the calculus of probabilities has any purchase upon the question of absolute law it can only, as Peirce so pertinently said, declare an infinite improbability *against* it; for between any given finite value which observation might fix as the probable maximum of the hypothetical irregularity, and the zero value which causality taken as absolute requires, there are an *infinity* of possible values, none of which is known to be more probable than another, so that the assumption that the value is exactly zero represents a probability of one over infinity.[2] The only alternative is to hold that the hypothesis of any freedom at all implies some one definite minimum not zero as peculiarly probable, but the grounds of this implication are not apparent. To be sure determinists generally hold that if there were any freedom it must be infinite, that there could be no law at all short of absolute law, but in this they seem merely to give dogmatic utterance to the absolutism which is the essence of their position. Every indeterminist has suggested reasons for holding that the lawlessness of the universe must be subject to limits, and that in asserting real chance he is no more denying real order than one who admits real evil in the world is denying real and even fundamental or cosmic good, or than one who innocently points to the fact that "laws" in the legal or man-made sense are seldom if ever *perfectly* carried out is declaring society to be a sheer chaos. Indeterminists also have generally shown reason for supposing that the distribution of irregularity in the world is itself neither perfectly regular or homogenous nor perfectly devoid of pattern, that certain parts of nature should be presumed much more monotonous than others, and that certain sciences, such as physics, exhibit the world as extraordinarily near to perfect regularity because they have selected for their subject-matter precisely the portions of the real to which this presumption particularly applies.

If determinism can not, as we have seen, be established by physi-

[2] It is often urged that statistical regularity of a group implies another, an absolute regularity of its members. It certainly does imply that the behavior of the individual units is not wholly a matter of chance, but that there is something between purely random and rigidly controlled behavior, is the essence of indeterminism.

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cal observation, there remains the possibility that the assumption of its truth is nevertheless obligatory because of the methodological advantages it entails. Granting that strict causes can not be observed, may it not still be true that the postulation of their existence would be a valuable and even an indispensable aid to the observation of approximate causes? If, one might argue, we believe that an element of wildness exists which may at any time exceed in magnitude the limit beyond which it would no longer be concealed by the errors of observation, how shall we resist the temptation to interpret each new discrepancy between theory and fact as indicative not of faults in the theory, but of an irreducible recalcitrance of the facts to all possible theories? Since we ought to hope that, although the margin of error will be constantly diminished, the adequacy of theoretical formulation to the facts will likewise make indefinite progress—for if we do not hope this, why should we go on with the scientific attempt—it seems that the assumption of even a slight degree of lawlessness in the universe is essentially inimical to science. Without doubt this is the most important of all the arguments against the reality of chance; yet it suffers from two weaknesses. First, if it be true that the indeterministic assumption "tempts" us to scientific despair, to a lack of zeal and persistence in the effort to find patterns in natural process, this is after all a psychological, not a logical, defect; as Whitehead has said in another but analogous context, though heads be weak, problems remain what they are. The universe is not bound to correspond entirely to our intellectual hopes; and moreover, it is possible for heads to be strong, in this case by keeping before themselves the thought that the supposition of some degree of wildness greater than zero in events is no real justification for inferring that any particular observational result is an instance of this wildness, so long as the alternative explanation is open to us of an error either in observation or in analysis. This alternative is exactly as legitimate upon the indeterministic, as upon the opposite, assumption. Nothing prevents the investigator who believes in indeterminism from nevertheless proceeding upon the working assumption that the range of freedom, while not zero, is yet less than the given margin of error could render perceptible, so that discrepancies between formulæ and observation, although these *may*, he agrees, be due to actual irregularity, are for scientific (not necessarily for philosophical) purposes to be taken as indicative rather of the need for better formulæ. If this working assumption is, except for its methodological advantages, arbitrary, it is no more so than absolute determinism, and it has the merit of greater modesty, since it refuses to declare a quantity zero merely because we do not know how small it may be, or because it may be convenient for us so to regard it.

A second weakness of the methodological argument is that it

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implies that the margin of observational accuracy can be reduced beyond all finite limits. It is here that quantum principles may perhaps shed new light upon the problem, since the granular structure which they ascribe to nature seems to render impossible not merely absolute accuracy, but even accuracy beyond a certain definite and finite limit. Any hypothesis of irregularity falling below that limit would be harmless to physics, since the only laws it "tempts" us not to seek to discover are such as are irrelevant to any possible observation. According to Heisenberg, the search for such laws is futile and even a positive obstacle to progress. The issue is too technical for decision by a layman, but one comment at least may be made. The Heisenberg group lay stress upon the tenet that the unobservable is for an experimental science the meaningless. On the very same grounds Einstein rejected absolute space. But in this appeal to the positivistic principle there is an ambiguity not always discerned by those who make it. It is one thing to say that if electrons can not be immediately perceived they do not as such exist, it is another to say that if absolute space is unexperienceable it is a pseudo-concept. For in the first case, while perhaps no one can identify electrons as data in his perceptual field, it might yet be possible to identify examples of the *kind* of thing an electron is. If the species has to be constructed by thought the genus may be a familiar entity. (How this applies to electrons we can not here inquire.) It is because absolute space is not only unknowable, but that even something like it, a wider concept of which it could be conceived a specialized form, is not met with in experience, that it must be rejected. (If this is not the case, then those are right who say that Einstein's position is dogmatic. Here, too, we must waive further discussion.) Taken in this form the appeal to observation seems to me, as to many recent philosophers and scientists—Bridgman, Alexander, Russell, Whitehead, Husserl, Dewey—the sole possible basis of rational knowledge, including even the purely mathematical.[3] And it applies with especial force to causality. If no instance of absolute cause can be observed, what that is even *like* this is observable? What, you may reply, if not the observationally known relative causes or regularities? The attempt, however, to construct from such experiences the notion of non-relative cause meets with a noteworthy difficulty. The difficulty is the same as that which many, including numerous determinists, find in the analogous modification of the experience of imperfect, limited minds into the concept of an infinite or perfect mind; namely, that the limits whose transcendence is posited seem the presupposition of the traits ascribed to both types of mind as constituting the generic element of "mentality" itself.

[3] On this last point, see C. S. Peirce, *Collected Papers*, Cambridge, Harvard University Press, 1932. 1.66, 2.280 ff.

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Remove limits and you remove environment, and what is a mind or personality without an environment upon which to act and from which to receive influences! Is the absolutizing of causality in better case? Conceive a present event in whose definiteness the definiteness of the future is equally given, "predetermined." What is this but the conception of a non-temporal temporal relation? For the only character of the future that adequately identifies the temporal direction toward it is just its indefiniteness, its unsettled character. To object that this is merely human limitation or ignorance is to desert the empirical criterion altogether, and then all things may (verbally) be asserted without fear of confrontation with any contradictory evidence, even any evidence that the words employed are not unmeaning or self-contradictory. It is to reject the standards so mercilessly maintained against the theologian as too exacting for physics or philosophy. An open future is the only kind of future we can experience or imagine; it can not, therefore, be transcended without explaining away what is to be explained. The concept of deterministic time appears in fact in the history of thought almost inseparable from the doctrine of the unreality of time. To omniscience, seeing time as it is, past, present, and future are equally definite and hence equally present in an eternal now; this thought has been the secret alliance (made explicit by Spinoza) of Western theology with naturalistic determinism. From this it also appears that the analogy between absolutism in regard to causality and absolutism in regard to mind, or in theology, involves a still closer relationship of the two problems than we have yet considered. It is, in truth, the more or less unconscious determinism of the theologians that has ruined their essential thesis, that mind can be conceived as infinite. If the creatures have no freedom with regard to their creator, if the latter, as Leibniz boldly said, included in the original creative act all the predicates which the creatures would ever possess, then for God there can in the true sense be no environment, and hence God can no more be a mind, as Spinoza conceded, than a dog-star is a dog. For if the only power is the creator's, then he acts only upon his own activity, he is a force with no opposing force, an empty concept if any such there be. Not so, however, if freedom be granted. The limited but real initiative of the creatures constitutes the environment which God must deal with in the way calculated to bring the most good out of the mixed good and evil of imperfect finite action, which action is not less truly real, i.e., creative, because not unlimited in power. Such a God will be temporal, although he may be everlasting and beginningless. The future for him must as such be real for the very same reason as for us, namely, because it is in itself not wholly definite—so long as it is future. Whether such a mind would be "finite" or limited we need not here inquire, beyond suggesting that

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it is not a limitation of knowledge to represent things as they in fact are, and that if the future is objectively indefinite (to a certain degree), then omniscience would so represent it, differing from our truly limited minds in this respect only in that the degree of indefiniteness would not be exaggerated, any more than it would be underestimated, whereas the uncertainty with which *we* anticipate the future is doubtless in some respects far greater, and in others may be less, than the actual contingency involved. Only in this way can finite and infinite minds be made comparable as minds, and different as perfect and imperfect. Both face real action, initiative, not their own, hence a partially uncertain future, but the uncertainty of the future as seen by the creatures is in an imperfect, while this uncertainty as seen by the creator is in a perfect or absolute, correspondence with the objectively real uncertainty of the world-future (of course, because the predetermination of events, so far as there is such, is merely the predecision or constitution of the divine will, so far as *not* self-limited by the creation of creatures with powers of decision of their own). Of the two absolutes, causality and knowledge, there can be room for but one and the most plausible one is not causality.

The foregoing apparent digression is conceived to be relevant to the general course of our discussion in two ways. It shows that the attempt by physicists to appeal to such epistemological criteria as experienceability involves such subtle ambiguities and interconnections with characteristically philosophical problems that this appeal can scarcely be expected to bring about a solution apart from the coöperation of philosophers.[4] Furthermore, it leads us to the consideration of the positive evidences for contingency which recent philosophy believes itself to have discovered. The fact that time, either as given, or as imaginable without destroying its nature, is always a relation of a present to a past that is felt as settled, and to a future which is felt as unsettled; or the fact that memory can not be regarded as altering the past without destroying the meaning of the latter as such, whereas anticipation does manifestly, through purpose, influence the actualization of the future as it manifestly could not do if the future were wholly bound by the already settled and unalterable past; such facts of experience are held by the new philosophy to constitute direct evidence of the reality of contingency. If it is objected that such "feeling" or intuition is subjective, the reply is: so in this sense is any immediate datum, and the crucial choice for philosophy is whether it shall explain, or merely denominate illusion, the data from which it starts. Suppose, however, it be insisted that time as given is pure illusion, at least with respect

[4] That it has not done so is seen in the vigorous anti-positivism of Einstein and Planck.

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to the characters in question. This does not dispose of the evidence which the new metaphysics has at its command. It is not time alone that becomes illusion if contingency be so. Nor is it merely the data of sheer intuition that must be set aside to make way for absolute causality. An opposite kind of difficulty is also involved, namely, a purely mathematical one. Grant the exclusion of contingency, of equally possible alternatives, from the cause-effect transition, and it then becomes demonstrable that contingency must nevertheless exist and have some *other* habitat in the universe. For it is mathematically impossible that all that exists should necessarily exist and that all that does not exist should necessarily not exist. As Professor C. I. Lewis has so well pointed out, the proof for the consistency of mutually-exclusive geometries strictly implies the contingency of whatever geometrical features do in fact obtain in the world.[5] Thus the old contention that it is only our ignorance that makes us distinguish between *what is* and what *may be,* or between what *may be* and what *must be,* is a general principle containing under itself as a special case the invalidity of the proof for the consistency of the non-Euclidean geometries. Until this invalidity has been shown, as seems unlikely to happen, we appear forced to reject all philosophies which, like that of Spinoza or the late Bernard Bosanquet, assert that nothing could have been other than it is.[6]

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## IS THERE LOGICAL FORCE IN DEMONSTRATION?

IN line with the empirical bent of contemporary thought there is a tendency to question the existence of any logical force in deduction. In this there is nothing surprising. Since Hume every conceivable type of force, agency, compelling power, or necessary connection has been suspect; hence nothing is more natural than that rational proof or demonstration should have its turn, and that formal connections (or that aspect of connections which is usually regarded as formal) should be denied efficacy and compulsiveness. The reasons for the denial are familiar: not only is there no empirical impression discoverable of any dynamic coercion or cohesiveness which is other than a psychological or a physical process, but any acknowledgment of such a logical force, it is held, would be equivalent to the admission of supernaturalism, since a criterion and connective of natural occurrences would be recognized which was itself not one of them.

[5] See C. I. Lewis, "Facts, Systems, and the Unity of the World," this JOURNAL, Vol. XX, pp. 141–151.

[6] To be continued in the next issue, No. 17.

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In general the naturalistic tendency finds expression as the impulse to reduce demonstration to manipulation, to operational or to experimental thinking as it is variously called. In certain quarters this takes the form of a modified behaviorism. Knowledge is said to be essentially action. Hence to reason is to move things about—either incipiently, symbolically, in a preliminary way, or physically on a large scale—to see what happens. Abstract intellection is described as a kind of manual or vocal play, usually as modified breathing symbolically adapted so that the auditory-vocal elements are integrated as conditioned reactions to specific individual or social needs. Among empiricists whose primary interest is in abstract relations and mathematical technique rather than in biological responses, however, assimilation of the operations of reasoning to manipulation is achieved somewhat differently. By them stress is laid upon the nature of the symbolic structure itself, rather than upon the elaborate physiological adjustments which the organism undergoes in the process of adaptation to the environment. At the same time they apparently agree with behaviorists that the bent of intelligence is to fabricate some habitual routine that shall work automatically, that is, to set up some artifice or contraption that, once started, shall run without the intervention of deliberative awareness, since the responses will be conditioned by the nature of the system itself.

The invention and playing of a game may be offered as an instance of the operation of such an abstract, manipulatory structure. The reasoner, like the player, having first arbitrarily or for convenience chosen certain counters and laid down rules for the game, then sets about seeing what he gets from the different possible rearrangements of his counters in accordance with the rules. In the last analysis, the counters with which he plays are meaningless marks, which may be replaced by others in the course of the game, provided the same tokens are substituted for the same marks consistently. The manipulations, too, are largely spatial "moves," reducible to operations of inclusion, exclusion, and replacement. To reason, on such a view, is to calculate like an adding machine. Presumably a well-constructed logical piano or a mechanical hopper with a few special attachments could perform the substitutions and classifications (as well as implications) with fewer mistakes than the most expert logician. At the same time, it hardly needs to be pointed out that physical shuffling of this sort is devoid of appeal to necessary connections or to logical force.

Between the foregoing views of demonstration as the manipulation of structures, there is essential agreement. For both, the initial set-up of the process is the expression of voluntary choice or practical convenience, unhampered by considerations of logical necessity.

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Moreover, both are nominalistic; to them objects are individuals, although admittedly of vastly different degrees of determinateness; while the symbolic relation, by which one thing comes to stand for another, is construed as at bottom nothing more than a conditioned reflex established between a particular stimulus and a particular response. Lastly, both emphasize experimental procedure, the advantage of varying conditions under our control, of trying out many different arrangements in more or less hit-or-miss, accidental fashion to see what ensues. Yet the combination of voluntarism, nominalism, and experimentalism seems plainly contrary to belief in logical necessity as a connective force distinct from psycho-physical processes.

Discussion here will be limited, however, to the second view of proof as manipulation, as a tendency implied to varying extents in certain works dealing with symbolic logic, and to inquiring how it is possible for a system to be a logical system if it is devoid of apodictic force and formal concatenation. To begin with, it may be asked what constitutes a logical system? The answer from the most general standpoint of symbolic logic is apparently that it is what has a structure. And a structure is a plan, map, or outline of some possible realm of entities together with statements regarding these entities and rules for their combination. The essentials of a system are, then, that it must have a base, and must include rules as to what things can be done and what can not be done with the elements of the base and their relations. Also the postulates, or initial statements regarding the elements, must be as far as possible free from contradiction, independent of one another, and must fully cover the formal properties of the set. Any further determination of the nature of these entities is a matter of indifference to the logician; it is no concern of his whether they represent points, instants, numbers, propositions, thingamabobs, or words in the dictionary—provided only that they stand for particular things of which the postulates hold. Yet the very generality of the requirements permits them, it is held, to apply to every possible group of objects capable of entering into any possible type of deductive system.

Yet once systems are reduced to postulate-sets, it seems plain that no actual inference or deductions drawn from a set constitute part of the system so conceived; the latter is taken rather simply as the abstract basis of a possible or conceivable deductive structure. By adopting the favorite realistic device of separating the *activity* from the *object*,—the *deduction* from the *structure from which it is deduced*,—logical force and necessary connections are apparently exorcised from formal systems altogether; and exorcised not only from the systems themselves, but from the actual processes of inference as well. For by restricting the logic of a system entirely to its structure, and ruling out any inclusion of procedure (by which we come

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to know that structure), inference is condemned to the status of a purely psychological process and becomes a logical superfluity; the passage of thought from certain parts of the system to other parts in a given sequence being regarded as entirely accidental, arising from the biological incapacity of the human organism to grasp the parts of a complex whole simultaneously. In the words of Mr. Eaton:

> The fact that all the formal characteristics of a complex system cannot be stated at once, but must be summed up in a few properties from which the others are "deduced" is due to our psychological limitations. If, like Leibniz's God, the divine mathematician we could survey the structure of the system in its entirety, deduction would not be needed.[1]

To be sure, the meaning of a system, on this view, includes rules of possible procedure and the elements of possible deductive structure; but whereas *the possible* inhabits the realm of the logical, *the actual* or *existent,* on the contrary, since it is inevitably contaminated with process, movement, and brute factuality, remains apparently for Mr. Eaton, as for Mr. Santayana, "logically inane."

To me, however, this recourse to the distinction between possible deductiveness and actual deduction (like that between possible and actual experience), under the impression that the one escapes the limitations of human incapacity, whereas the other does not, seems a little absurd. After all, our conceptions of logically possible deductive structures are subject to the same strictures as our actual deductions, since both must be admitted to be cogitations of the same psycho-physical organism, and hence must share alike an existential aspect from which we seem no less privileged to abstract in the one case than in the other. One need not doubt that there are more theorems deducible from the Euclidean postulate-set than have actually been deduced, without at the same time holding that those that have been deduced, precisely because they have been deduced, are expressions of our psychological limitations. Even an infinite perceiver could hardly grasp a logical system merely by including a postulate-set and its relations in a single glance of the eye; assuredly he would have to trace the connections and consequences of the various alternative dispositions of the elements,—a process in its nature deductive even though it might conceivably be instantaneous. The point is that the very nature of system involves order, interrelations, advance from anterior to subsequent stages, although the question whether the apprehension of its course requires the experience of temporal succession is logically irrelevant. Certainly such a view as we are criticizing gives substance at this point to the charges of the anti-formalists that formal logic has no place in it in which to take account of any dynamic processes or operations, but

[1] Eaton, R., *General Logic,* p. 475.

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presents a frozen, static world of abstract forms, petrified skeletons of thought from which the breath of life has departed.

But if deduction be ruled out of logical structure, it is hard to see in what the connection of its forms can consist. Ultimately the mutual *rapport* of the elements can only be described as some sort of pre-established harmony, none the less miraculous though blessed by some with the name "analytic." For in the view of most recent logicians formal knowledge is completely analytic; all the new properties and relations discovered having been wittingly or unwittingly introduced in the original postulates of the system.

The two analogues which more or less explicitly dominate such accounts of knowledge, as it appears to me, are those of the dictionary and the machine. Thinkers who emphasize extension incline to be mechanics, while those devoted to intension tend to become lexicographers. For the latter, the relation of terms to one another and the nature of proof is like that of words in the dictionary. That is, in a dictionary words are related through cross-definition, by substitution for one another as synonyms and through classification by genus and species. The *definiendum* and the *definiens* must be identical or equivalent in the sense that the membership of both classes must coincide, the scope of their intensions must be the same, although the particular content of their meanings may be different. In a sense, of course, such definitions are nominal, the substitution of shorter symbols for longer ones to save time and labor; and as such are the expression of volition rather than intellection. Ideally the collection of words is thought to form a closed system; no element having meaning in itself apart from its relation to the others. But just as the words of the dictionary are ultimately indefinable save in terms of each other, so that its definitions turn out to be finally circular,—similarly the logic of any system, on such a view, is circular, although (as in the case of the dictionary) its logic may be saved from being a bad logic by the diameter of the circle.[2]

But the question to be raised at this point, as we see it, is whether a dictionary is rightly to be called a logical system at all, since it contains no systematic deductions or proof. After all, the elements of the dictionary, which are vocabularies, definitions, interchangeable meanings, verbal significances, are very different from the relation of ground and consequent, the determination of one formal pattern through an anterior pattern, which constitutes the most striking feature of a demonstrative structure like Euclid's. Were the dictionary construed as such a deductive system, it would cease to be a dictionary, i.e., a thesaurus of words or lexicon of synonyms and classifications; and would become instead a scientific system, an

[2] Lewis, C. I., *Mind and the World Order*, p. 82, p. 209.

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integrated body of laws in which emphasis would lie not in the mere summarizing of knowledge, but in the relationship between certain terms taken as evidence and the conclusions which they were held to establish. For a genuine deductive system seems always compounded of postulates (i.e., unproved premises) and theorems (i.e., consequents derived from them). Yet this feature is precisely what is lacking in the dictionary as a dictionary, since its terms are rather taken as coördinate and accidentally ordered, and not as a hierarchical structure built upon certain basic elements which stand under and support the rest.

Furthermore, it may be objected that a genuine logical system is not open to the charge of circularity in the same sense as is the dictionary. Ideally all the words in the dictionary are defined in terms of one another; and no definition is a good definition unless the scope of the *definiendum* and *definiens* coincide. Often, too, the synonyms are practically tautologous substitutions in intension, really saying nothing but the same thing over again in different symbols: as when "degrading" is offered as the meaning of "debasing." Hence the application of such a definition involves a logically circular inference, in which the conclusion simply repeats the premise without making any real advance. Thus "Whatever is debasing is degrading. Accordingly, any specific instance of what is debasing is degrading." In a valid logical system, on the contrary, no two terms in the same premise are mere synonyms, mere *alter idem's* of each other as in the foregoing case; and are therefore not related through mere substitution, but by a "because-therefore," ground-consequent relationship. As an instance of the connection which obtains in a non-circular, truly logical system, the following inference may serve: "All right triangles have the square of the hypotenuse equal to the sum of the squares of the other two sides. Some isosceles triangles are right triangles. Therefore some isosceles triangles have the square of the hypotenuse equal to the sum of the squares of the other two sides." Here the conclusion, which contributed to the discovery of irrationals, can not be identified either with the theorem stated in the major or with the minor premise taken by itself. On the contrary, the conclusion offers a new integration of elements, which appeared scattered separately in the premises. Similarly a valid deductive system can not be said to be circular because the theorems derived from it are contained in the original postulates taken separately or collectively; rather they arise from new combinations which the elements take on in the course of the operations.

Nor does the machine offer a more satisfactory analogue than the dictionary for the description of logical structure. For although their unlikenesses are often ignored, a logical system differs from a physical engine in at least two important respects: whereas the struc-

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ture of the latter is defined in terms of *causal relations* and the *properties of the material* (iron or steel) of which it is composed, that of the former is determined by *grounds*, by weight of evidence, and by the *formal pattern* of the material, but not by the material itself. To reason in the full sense is not simply to calculate mechanically like an adding machine. It is not merely to put in and take out counters by spatial displacements, but it is to back up the manipulation of counters with the insight that they *stand for* something (though the particular subject-matter for which they stand in a specific case may be irrelevant) and to see that the relationship of the parts *proves* something. Whereas the machine operates by wires, hammers, wheels, levers, pushes and pulls, inclusions and exclusions, these processes do not of themselves establish any connections of law and instance, variables and their values, ground and consequent, such as enter into the linkage of formal systems. That one thing is spatially contained in or adjacent to another, does not mean that the one logically necessitates the other.

Such a view of deduction as an automatic process of manipulation recalls, as Mr. Lewis once suggested,[3] the weird practices of that strange people discovered by Gulliver who fed letters to machines and then waited for them to turn out presumably logical and mathematical, as well as literary masterpieces by the fortuity of alphabetical combinations and permutations. It no less irresistibly recalls to Mr. Lewis apparently a logic like Mr. Russell's which is described in *Mind and the World Order* as based upon:

> an implication relation such that if twenty sentences be cut from a newspaper and put in a hat, and then two of these be drawn at random, one of them will certainly imply the other, and it is an even chance that the implication will be mutual.[4]

Yet Mr. Lewis's own view of logical system, in which the definition appears as the paradigm of the *a priori*, seems hardly less devoid of genuinely necessary connections; and this despite the fact that he has elaborated a theory of "strict implication" in which "necessity" appears as one of the five fundamental truth-values,[5] and in which "$p$ strictly implies $q$" is taken to mean that $p$ necessitates $q$ logically, if it is impossible (i.e., self-contradictory) that $p$ should be true and $q$ false. For justification of our criticism it is desirable to examine a little more closely what Mr. Lewis means by logical necessity. In the first place, it should not be forgotten that in Mr. Lewis's view metaphysics in the last analysis determines logic. Accordingly, we should not be surprised to discover in his own case that his definition of

[3] Lewis, C. I., *Survey of Symbolic Logic*, p. 360, note.
[4] Lewis, C. I., *Mind and the World Order*, p. 248.
[5] Lewis, C. I., *Survey of Symbolic Logic*, p. 292.

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reality in terms of a shadowy bio-evolutionary cosmology, involving animals, their behavior, the struggle for survival and the environmental pressure, finally determines his logic. Lest I be thought to misrepresent Mr. Lewis's view, let me quote him directly:

> The human animal with his needs and interests confronts an experience in which these must be satisfied, if at all. Both the general character of the experience and the nature of the animal will be reflected in the mode of behavior which marks this attempt to realize his ends. This will be true of the categories of his thinking [p. 239]. . . . Genuine issues of logic . . . stand above questions of the merely self-critical integrity of the logical system. There are such issues, and these cannot be determined—except on pragmatic grounds of human bent and intellectual convenience . . . [They are] only questions of convenience or of value [p. 248] . . . The ultimate criteria of the laws of logic are pragmatic [p. 247].[6]

Since the human animal's needs control and are reflected in the *a priori* categories of his thinking, formal logical necessity must give place to material, practical, biological necessity. This is apparently shown to Mr. Lewis's satisfaction by the fact that there exist a plurality of different logics which by the test of internal consistency seem equally valid. The only means he finds of choosing among these alternative, conflicting logics is to fall back upon pragmatic convenience and biological utility. It is not enough to say that logic tests itself; we are immediately confronted with the problem, what tests logic?—a question only to be answered, in Mr. Lewis's view, by an instrumentalism of natural knowledge. The possibility that the internal self-consistency of each system might constitute a common character and criterion of all alternative logics, and might thus furnish the outline of a basic non-alternative logic does not apparently occur to him. Yet as a matter of fact it would appear that all conceivable "logics" are subject to the requirement of operational integrity; that is, they must be consistent with their postulates in their developments. To this, even the "logic" that made inconsistency its rule of procedure would be no exception, since unless it remained consistent in its inconsistency, meticulously selecting terms that conflicted with one another and in general "playing the game" by keeping its promises in its performance, it would not possess enough unity to be called a "system" (either of logic or metaphysics), or to be tested for truth on any terms. Thus the rules of consistency, even when denied in the premises from which we reason, operate none the less as principles in accordance with which we reason.

Did space permit we could go on to show how, for Mr. Lewis, impulsion and inevitability are stripped from the *a priori*;[7] and how the logical categories are simply purposive attitudes that have arisen

[6] Lewis, C. I., *Mind and the World Order.*

[7] *Ibid.*, p. 213.

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in the human animal through interaction with the surrounding world. As such they represent widely useful and enduring dictionaries of denotative and connotative behavior, vocabularies of action enabling humans to translate their gesture patterns into terms of one another and thus to coöperate for prosperous continuance. For the individual, the moral of such a code of logic would seem to be to avoid the dangers of originality. Since to the man who had once learned through group nurture to correlate his vocabulary with the proper pointing attitudes, convenience and safety would obviously dictate that he should continue to follow the folkways and conditioned reflexes of the group rather than suffer the risks of rebellion. For although, on such a view, there can be nothing formally invalid or false about the new "logics" and "categories" invented by rebel geniuses, nevertheless such geniuses may be assured in advance that there can be no truth in their systems as abstract logical systems, that the group will probably persecute them bitterly for their insurgence, while the applied utility of their ideas is not likely to be tested by evolution for thousands of years.

Having argued that logical system is not to be identified with existential mechanism or with verbal substitutions, we may conclude with some brief remarks bearing directly on the genuineness of logical force in such systems. In the first place, nominalism can hardly plausibly be assumed with reference to logical systems so long as these latter are taken as genuine, for the reason that logical systems constantly involve totalities, classes, universals, which ideas are abhorrent to nominalists, since they are not individual observable data. Secondly, the postulates of a logical system are not entirely free, voluntary, or groundless selections for the reason that there are certain principles which we are not free not to choose, notably the principles of consistency and inference. Even when we deny these as premises from which we reason, they are assumed as principles according to which we reason, and so illustrate the supremacy of form over matter in their reintroduction in their very denial. Moreover, logical systems are not primarily experimental systems; that is, their developments are not guided by an adventurous spirit of trial and error, but by the effort to discover what theoretical consequents follow from certain postulates according to preëstablished rules. Lastly, it may be maintained that logical principles possess a certain inevitableness and impulsion, since not only is their validity presupposed in all the structures of knowledge, but they serve as tests of the formal truth of all other systems without being themselves subject to any extraneous principles.

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## BOOK REVIEWS

*A World of Epitomizations. A Study in the Philosophy of the Sciences.* GEORGE PERRIGO CONGER. Princeton: Princeton University Press. 1931. ix + 605 pp.

Probably the great majority of present-day philosophers yearn for a double life—the first three score and ten to provide a mastery of the sciences and mathematics, the second for a comprehensive synthesis in the direction envisaged by Aristotle. However justly one may distinguish between philosophy and science it remains true—Croce to the contrary in his distinction between "empirical" and "philosophical"—that even Idealists must take cognizance of data empirically, even realistically, determined, unless they are willing to shut themselves off from a vast continent of experience. The fact that some philosophic thought, even of the recent past, has been arid and fruitless is doubtless related to the wide demand for sterilized specialization, a demand sometimes construed as a segregation of our discipline into discussion of quiddities unrelated to any determinable portion of reality or experience.

Present-day philosophy is in part a rediscovery brought about by mathematicians, astronomers, biologists, physicists, and others, who not only recognize their common ancestry but their kindred objectives. With it has come a challenge and a renascence comparable with that of the Pre-Socratic period. There can be no doubt in anybody's mind to-day that the great mother of the sciences is perennially young and subject to no climacteric.

Professor Conger has set himself the prodigious task of construing a vast array of scientific data, principles, and theories in terms of relatively few concepts and generalizations. His method is resolutely realistic but with the proviso that it may not be final and with open-minded willingness to follow Montague's "federation of methods" in the quest for organic synthesis. Two other presuppositions are: "the mechanistic view that mind is nervous system at work" (somewhat modified later by a doctrine called "epitomizing interaction") and, secondly, the necessarily selective character of perception by which certain parts of experience remain neglected, indeterminate, and unexplored, but which the author proposes to treat more justly. Just how he succeeds in doing greater justice to these "enotative" aspects is, however, difficult to make out.

In Division One Professor Conger divides the cosmos roughly into three "realms": the *cosmogonic* (material), the *biotic* (data of organic chemistry to sociology inclusive), the *neuropsychological* (neurology, psychology, and part of epistemology). In the Second Division he adds the *logical*, the *numerical*, and the *geometric-kinematical*. Each of these has by hypothesis different "levels" or

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"configurations" which range from "lower" (simpler) to "higher" (more complex) and express evolutionary sequence. Thus in the biotic realm the levels are: (1) organic compounds, up to and including amino acids; (2) molecular complexes, including organic colloids; (3) infracellular and unicellular organisms; (4) multicellular organisms, including colonies, plants, and animals; (5) plant societies and plant-and-animal societies, the latter including primitive human groups; (6) tribal and national societies; (7) imperial and federated states; (8) racial or continental societies; (9) the total biotic population of the earth as a monad (p. 4).

The fundamental thesis of the work is the hypothesis called "epitomization" according to which all the "monads" of the various levels and realms exhibit significant resemblances in their characteristic structures and processes. The basis upon which these significant resemblances are established in the author's thinking is a very elaborate one, although the "four monadic characteristics" are relatively simple concepts. "Monad," in the first place, is, of course, a relative term, applying with propriety to lines and tubes of force, atoms, star-clusters, plant-colonies, imperial and federated states, reflexes (p. 243), sentiment-complexes, selves, and the earth's total population as a monad. It implies individuation or organization, but also strongly challenges differentiation to make the theory significant. The author undertakes this by distinguishing between "prior" and "later," "cognate," "analogous," "parallel," "dyadic," "simple," "compound," and "complex" monads which in turn depend upon individuation relative to other monads, interactions (including appropriations and rejections), repeated production or reproduction, and segregation. The last includes processes of disintegration, aggregation, integration, and differentiation. Under such conditions the uses of the terms "monad" and "epitomization" (which depends upon the former) are necessarily somewhat fluid and Heraclitean. So variously significant, indeed, are the uses of these fundamental concepts that the reader has difficulty in correlating the resemblances which the author adduces from his wide knowledge of the sciences. For monads are presupposed to assume and maintain relatively stable forms (p. 13). "Structure" is taken to mean a balance between augmentation and depletion (p. 12). "Function" may also be a monad (p. 243).

Professor Conger has recourse to an immense number of investigators by whose work he endeavors to show that monads of the various levels and realms may be arranged in parallel columns and studied in the light of their resemblances; whereby it appears that cosmogony is epitomized by biology and biology in turn by neuro-psychology. The *senses* in which these analogies may be said to obtain is sometimes difficult to make out. And Professor Conger

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himself recognizes this. But even where he is secure the present reviewer finds the resemblances dubious. Thus after going through the data adduced and the (sometimes conflicting) theories of Lorentz, Whitehead, Einstein, Eddington, J. J. Thompson, Jeans, Haas, Russell, and others as outlined here, I have difficulty in realizing how "units of electric charge" may be said to epitomize "conductions in receptor-effector systems" as variously described in the works of G. H. Parker, Sherrington, Jennings, C. H. Child, R. S. Lillie, and others. Nor can I see how "clusters of spiral nebulae" may be regarded as epitomizing "value-complexes or valuations." That there are analogies of various sorts—integrations, appropriations, aggregations, parallels with regard to time, "motions"—figuratively and otherwise—is clear enough. But what abides our question is: the significance to be derived from descriptions in these terms.

Quoting examples from the text will perhaps best illustrate the reviewer's difficulty. On page 156 after some account of V. R. Khanolkar's theory of "rotation of activity" among the cellular units of organs we read: "Complicated periodicities are evident in the interlocked circulations of blood, lymph, glandular secretions, oxygen, and nutrient and waste materials. Parallels between the rotations of astronomical bodies and the interactions of multicellular organisms doubtless exist, but in the myriad interactions possible for animals and their constituent monads any simple and regular recurrence is lost sight of in the more widely varied contacts with given portions of the environment." Again (p. 159) "The atoms in a nebula are doubtless discrete, and in the gaseous state; the cells in a colonial organism like Volvox are, on the whole, well-marked individuals, although, as might be expected, if there is a cumulative coordination throughout successive realms, the cells are not discrete but joined by connecting strands. In the outer regions of a star or planet, the atoms and molecules are gaseous, whereas the cells in surface layers of plants and animals are sometimes all but lost in thick intercellular substances which protect the organism; but, at least in animals, such thickenings are modifications or secretions of simple epithelial tissue, in which the cell outlines are clearly marked. In stars, according to Jeans, the central regions may be supposed to be liquid; in planets the regions toward the center are often conducting, as in the xylem and phloem of the vascular plants."

Geological strata are on page 162 correlated with the endoderm and mesoderm of animal embryos, the cortex of plants, the bones, muscles, lining of body cavity, blood vessels, etc., but the parallelism is found to be "not precise." On page 171 the "recapitulation" of phylogeny by ontogeny is correlated with the periodic system of atomic weights. The recapitulation theory can not indeed be taken in full detail, yet it brings out some of the general characteristics of

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species as evidenced in chromosomes. "Moreover, just as all atoms of inactive gases at the ends of the rows in the periodic table are more or less alike, so all chromosomes may be said to be at least sufficiently alike so that the organisms in which they are found . . . exercise living functions in general similar." On page 185 occurs the following parallelism: "If a group of animals capable of locomotion depends upon a few fixed localized plants for food or shelter, the animals will be peripheral and move around the plants, as when insects or birds move around the tree in which they nest. . . . Measured to scale, the paths of higher animals are much more complex than the orbits of planets, but this is to be expected in a world where there is cumulative coordination." On page 200 the "progress of nations" is suspected to be analogous to the periodic table of atoms. Again (p. 210): "If the geographical region is a macroörganism, then men are its nerve-cells. The gross differentiation is perhaps incipiently that of central and peripheral regions; Geneva, for example, lies not far from the center of the earth's land areas."

Sometimes the analogies challenge more imagination than the present reviewer possesses. For example, in accounting for the characteristic uniqueness of the psychical Professor Conger says (p. 219) it is just what we might have expected. "We might say that just as, according to the Relativists, matter arises in a discrepancy between space-time systems, and just as, paraphrasing Boodin, life may be said to result from a kind of discrepancy between the stages of development reached in different astronomical bodies, so, on the introspectionist view, 'mind' may be said to consist in just such a discrepancy as we have noted between observed and observing organisms." Professor Conger thinks there is indication of a break in the parallelisms which the hypothesis of epitomization seeks to detect in the test case of the stars. But in the end the difficulty appears to be gratuitous. "One might demand as a test of the hypothesis that just as there are "nervous" structures and processes in plants, so there ought to be "living" structures and processes in the stars, but it seems gratuitous to consider such an unanswerable question. Perhaps this is a real break in the parallelisms" (p. 220).

Now the real difficulty is just here: Can we say which parallelisms are gratuitous except in the light of significant principles? And I find it difficult to discover *what* conclusions of a specific kind are to be drawn not only from the array of facts, but from the conflicting theories and hypothesis in which epitomization is said to be implied or made explicit. In the summary of Division One (p. 235) we have the statement that the monads of each level resemble one another in the characteristics of individuation, interaction, repeated production or reproduction and segregation. The resemblances are said to be only "general." But what *is* a general resemblance in monads—

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defined as they are above—in terms of their "segregation"? Is segregation a resemblance? If so must one not distinguish between spatial discreteness and mental "segregation"? Can an emotion (Monad I) be said philosophically or scientifically to resemble a star (Monad II) by virtue of being "segregated" from opposite emotions, or because it requires a certain time to complete its "orbit"? Does not the whole conception of resemblance disappear when the four monadic characteristics are so widely stretched that they include almost anything and everything? Even the four monadic characteristics merge into one another. The individuation of a monad "consists in interaction" (p. 8). And interactions consist of appropriations and rejections upon which (3) production and reproduction are founded. The fourth, segregation, is interaction on its negative side of disintegration, etc. In short, analogies are so freely employed that resemblance comes to include almost any imaginable metaphor, an exercise of imagination which is, of course, the greatest asset of the creator and explorer but one subject to terrible risks of scientific and philosophical relevancy.

The chief hypothesis of the second division is "that the logical entities, numbers, and the entities or events of geometry-kinematics, respectively, constitute realms prior to and leading in orderly fashion up to matter, life and mind; and that logic, number and geometry-kinematics are related to one another as other realms are related to one another" (p. 345). The basis of these parallels is a series of "levels" with anticipatory monads prophetic of higher levels,—e.g. logical entities provide monads which lead on to numbers just as "in a sponge excitation arcs with neuroid connections are the beginning of neuropsychology" (p. 350). The monads of various levels in the realm of subsistence exhibit characteristic individuations, appropriations, and rejections, productions or reproductions and segregation into monads of different levels parallel to those in the material or cosmogonic realm. They also evolve and run through a process of "cumulative coördination." Thus logic has "atomic" and "molecular" propositions and "electronic" reference. It is subject to the same important relationship of container and contained which as applied to spatial relationships was (on p. 337) already seen to be "better illustrated by concentric circles than by a pyramidal diagram" and which was there "rendered more precise" by the examples of "the earth's biosphere as contained in one astronomical body, the earth," and of "individual nervous systems as contained in one multicellular organism." Logic has not only "regions" but whole "universes of discourse." Organization is exhibited in classes or classes of classes and a prophetic monad is found in "classes which are similar to a given class—that is in numbers." The successive powers of numbers correspond to successive levels. The "four

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monadic characteristics" are thought to apply here as in the nature of matter, life, and mind. Thus in logic "affirmative predication appears as the appropriation of a relation or attribute by a subject term" and negative predication is its rejection (p. 353). The processes of inference (logical realm) are parallel with processes of division and extraction of roots (in the realm of numbers) as well as with processes of bisection, generation of angles, etc. (geometry-kinematics). In logic the fourth monadic characteristic, *segregation*, is detected in the properties of generalizations. In the numerical realm segregation is detected in the various powers of numbers; and, in the geometrical-kinematical in figures having different numbers of dimensions. How the numerical is refracted through the geometrical is evident in the columnar arrangements of figures, but more profoundly in the properties of series or of matrices.

What has been observed above concerning the analogies of Division One would also seem to apply here and need not be repeated. Doubts remain in the reviewer's mind whether Professor Conger has really made his hypothesis plausible or even "sayable" after his myriad uses of terms to which a devotion to analogy constrains him. And yet the tentative hypothetical attitude manifested in this zealous effort of an explorer at synthesis of what has time out of mind remained stubbornly pluralistic seems to make even mild criticism ungracious. The book will surely prove a stimulating one to all who are interested in the possibility of a scientific *Weltanschauung*.

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*L'Unité Humaine: Histoire de la Civilisation et de l'Esprit humain.* PAUL PERRIER. Paris: Félix Alcan. 1931. xlvii + 404 pp.

The common complaint that modern writers are specialists who dare not take vast fields of knowledge for their province can hardly be urged against this first volume of M. Perrier's ambitious project, a philosophy of history seen through the four major social forms of religion, the state, law and economics, and civilization generally. The author brings to his staggering task an immense fund of information gleaned in libraries, together with a disinclination to indicate (in this volume at least) hardly any of his sources. In an earlier book he developed the opposition between the world-view of the artist and that of the philosopher, the one interested in separate concrete objects while the other is devoted to cosmic formulas and laws. In this larger work he boldly sets forth upon the path of the philosopher, maintaining as his thesis the convergence of the general forms of human cultures through the centuries, tending apparently toward an eventual identity. As the circles of primitive life widen

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into world-associations, the number of "outsiders" is constantly reduced, and the same broad patterns of behavior tend to be accepted by everyone. Plainly the recognition of this inherent tendency toward convergence on the part of all the peoples of the earth would have important social consequences, which may be more fully developed in the author's second volume.

The wide sweep of his argument is impressive; and yet the simplicity of his thesis arouses the suspicion that he is guilty of that vice so dear to philosophers of history from St. Augustine and Bossuet to Spengler and H. G. Wells, the selection of only those facts which fit one's central idea. At the end of the section on religion, which comprises the first 235 pages of his work, M. Perrier is obliged to admit that humanity's ideal figures: Hercules, Buddha, Jesus, St. Martin, and St. Francis, no matter how pure or great their teachings, have invariably given rise to contradictions, "like everything else that belongs to life in the concrete." And yet, in a manner reminiscent of Saint-Simon and Comte, he insists that in the future "*la morale ne sera établie que le jour où une grande idée abstraite, substituée à ces images vénérables, aura été reconnue par tous les hommes.*" Similarly his treatment of the state is drastically brought to a unity in the future by his chapter on statistics, which seems to prophesy the triumph of a social physics *à la* Condorcet: "Under the influence of this prodigious (and irresistible) abstraction, the human mind has diverged from its origins, where vagueness and imprecision give life all its charm. Ethics are even changed by it; and in modern society faults committed against exactitude will in time become the most unpardonable of crimes."

HAROLD A. LARRABEE

UNION COLLEGE

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## JOURNALS AND NEW BOOKS

THE MONIST. Vol. XLII, No. 3. Truth, Action and Verification: *Charles W. Morris.* On the Contingency of Natural Law: *Chester T. Ruddick.* The Hypothesis of Reducibility: *Paul Gastwirth.* Nietzsche and the Problem of Democracy: *E. Y. Melekian.* Goethe and Philosophy: *Edward L. Schaub.*

MIND. Vol. XLI, No. 163. Probability: Axioms: *W. E. Johnson.* Truth and Falsity: *G. F. Stout.* Two Problems about Duty (III): *W. A. Pickard-Cambridge.* Discussions—Uses of Formal Logic: *Alfred Sidgwick.* A Note on Nicod's Postulate: *W. V. Quine.*

Bridgman, Percy W.: Die Logik der heutigen Physik. Mit einer Einführung von Hugo Dingler. Autorisierte deutsche Übersetzung von Wilhelm Krampf. München: Max Hueber. 1932. 186 s. 4.80 M.

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Dexter, Walter Friar: Herbert Hoover and American Individualism. A Modern Interpretation of a National Ideal. New York: Macmillan Co. 1932. x + 256 pp. $2.00.

Dorer, M.: Historische Grundlagen der Psychoanalyse. Leipzig: Felix Meiner. 1932. 184 s. 6 M.

Faust, August: Der Möglichkeitsgedanke Systemgeschichtliche Untersuchungen. Erster Teil: Antike Philosophie. Zweiter Teil: Christliche Philosophie. (Synthesis Sammlung historischer Monographien philosophischer Begriffe, VI, VII.) Heidelburg: Carl Winters Universitätsbuchhandlung. 1931, 1932. xii + 460 pp; 356 pp. 17.50 M.; 13.50 M.

Guzzo, Augusto: I Dialoghi del Bruno. Torino: Edizioni de "L'Erma." 1932. 206 pp.

Hartmann, Nicolai: Ethics. Volume III: Moral Freedom. Authorized translation by Stanton Coit. (Library of Philosophy.) New York: Macmillan Co. 1932. 288 pp. $2.50.

Husserl, Edmond: Méditations Cartésiennes. Introduction à la Phénoménologie. (Bibliothèque de la Société française de Philosophie.) Paris: Armand Colin. 1932. vii + 136 pp. 15 fr.

Jolivet, Régis: La Philosophie Chrétienne et la Pensée Contemporaine. Paris: Pierre Tequi. 1932. vi + 227 pp. 15 fr.

Lepetit, Abbé V.: Sur les pas d'une Sainte. Etude biographique, psychologique et littéraire concernant les séjours de Ste. Thérèse de Lisieux au Bord de la Mer (1878–1887). Préface de Mgr. L. Prunel. Deuxième edition. Paris: Pierre Tequi. 1932. xi + 108 pp.

Mead, George Herbert: The Philosophy of the Present. Edited by Arthur E. Murphy. With Prefatory Remarks by John Dewey. (Lectures upon the Paul Carus Foundation, Third Series.) Chicago: Open Court Publishing Co. 1932. xl + 199 pp. $3.00.

Raiga, Eugène: L'Envie. Son rôle social. Paris: Félix Alcan. 1932. xv + 268 pp. 15 fr.

Wahl, Jean: Vers le Concret. Etudes d'Histoire de la Philosophie Contemporaine. (Bibliothèque l'Histoire de la Philosophie.) Paris: J. Vrin. 1932. 269 pp. 30 fr.

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## NOTES AND NEWS

The Tenth International Congress of Psychology will be held August 22–27, 1932, at Copenhagen, Denmark, the meetings being held at the University.

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The Societas Spinozana will commemorate the 300th anniversary of the birth of Spinoza at The Hague from September 5 to 10, 1932, with a philosophical congress to which eminent thinkers and stu-

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dents of the philosophy of Spinoza have been invited to contribute. In addition to the historical and critical problems of Spinoza's philosophy, there will be symposia on the relations of (1) Physics and Metaphysics and (2) of Religion and Philosophy in the light of modern thought and Spinoza's teaching, led by Brunschvicg, Sir Frederick Pollock, Ortega y Gasset, and Santayana, among others.

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The 1932 meeting of the American Psychological Association will be held at Cornell University, Ithaca, N. Y., September 8–10.

There will be sessions as follows:

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| September 8— | 8:30 | Registration |
| | 9:30 | General |
| | 10:00 | Personality and Character |
| | 10:30 | Work and Efficiency |
| | 1:30 | Sensory Phenomena |
| | 2:15 | Animal Psychology |
| | 3:00 | Clinical Psychology |
| | 4:30 | Clinical Psychology Business Meeting |
| | 8:00 | Annual Business Meeting |
| September 9— | 9:00 | Child Psychology |
| | 9:45 | Sensory Phenomena |
| | 10:30 | Abnormal Psychology |
| | 1:30 | Animal Psychology |
| | 2:15 | Clinical Psychology |
| | 3:00 | Applied Psychology |
| | 4:30 | Round Table, Radio in Education |
| | 8:30 | Presidential Address by Willard Straight Hall |
| September 10— | 9:00 | Physiological Psychology |
| | 9:45 | Learning |
| | 10:30 | Mental Tests |
| | 1:30 | Memory |
| | 2:15 | Animal Psychology |

There will be an Exhibit of Apparatus in the Laboratory of Psychology.

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# THE JOURNAL OF PHILOSOPHY

There is no similar journal in the field of scientific philosophy It is issued fortnightly and permits the quick publication of short contributions, prompt reviews, and timely discussions. The contents of the last six issues are as follows:

**Volume XXIX. No. 10. May 12, 1932.**

The Displacement of the Sense-Datum. D. S. MACKAY.
On the Instrumental Analysis of Thought. CARLOS KLING.
Epistemology and Symbolism. M. WHITCOMB HESS.
Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 11. May 26, 1932.**

The Prestige of the Infinite. GEORGE SANTAYANA.
Report of the Thirty-Third Annual Meeting of the Western Division of the American Philosophical Association.
A. CORNELIUS BENJAMIN.
Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 12. June 9, 1932.**

Substances, Events, and Facts. L. SUSAN STEBBING.
A Critical Analysis of the Concept of Introspection.
MARTEN TEN HOOR.
Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 13. June 23, 1932.**

Dualisms Good and Bad (I). ARTHUR O. LOVEJOY.
A Spinozistic Fancy. B. A. G. FULLER.
Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 14. July 7, 1932.**

Physics and Metaphysics. EVANDER BRADLEY MCGILVARY.
Dualisms Good and Bad (II). ARTHUR O. LOVEJOY.
Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 15. July 21, 1932.**

The Inadequacy of the Hedonistic Interpretation of Pessimism.
CORNELIUS KRUSÉ.
On Zeno's Paradox of Motion. RALPH B. WINN.
Book Reviews. Journals and New Books. Notes and News.

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# The Journal of Philosophy

## THE DIRECTIVE INFLUENCE IN LIVING ORGANISMS

ALTHOUGH the application of modern physics to theoretical biology is still at an early stage, there are already many signs of a far-reaching transformation in our fundamental conceptions of the physical nature of vital action. In particular, the fine-grained structure of living matter has acquired a new significance, as constituting evidence of the special importance of small-scale or intra-atomic types of determination in vital processes. Formerly, when the laws determining the transfer of energy were assumed to be of the same kind for all masses, large and small, the single atom was regarded simply as an inert body of small dimensions and negligible internal constitution, whose behavior was completely determined by the sum-total of physical influences acting upon it from outside. It had no self-determination or internal spontaneity; in the absence of external influence it preserved unaltered the state (i.e., of uniform motion in a straight line) in which it happened to be at the time. The inevitable corollary was the conception of the tightly interlocked, completely deterministic universe; alternative possibilities of action in any material system were excluded; only one outcome of any given physical configuration was possible, a view which, when carried over into physiology, furnished the chief support for the modern paradoxical conception of human conduct as completely determined by purely physical factors. But since the rise of the electron theory of atomic constitution, with the increasing experimental evidence that the behavior of single electrons is only partially controllable from outside, we have come to recognize that intra-atomic as well as external conditions must be considered in accounting for the behavior of single atoms. Two sources of determination in atomic activity are thus to be distinguished, one external, consisting of influences received directly or indirectly from other atoms, the other internal, consisting of impulses to action originating within the atom itself and apparently independent of immediate external conditions. The possibility presents itself that the latter—unrecognized by the classical physics and the physiology based upon it—may be a chief source of the directive activity or



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control so highly developed in living organisms and shown especially in their development and individual behavior.[1]

The present problem has reference to the ultimate physical basis of the contrast between vital and non-vital modes of determination. All observation shows that determinateness and regularity are properties which are common, in some degree at least, to all natural systems and events, living and non-living; to this degree science must be regarded as applicable to all natural reality. But just how far it can be applied is still a question; the scientifically unamenable element in life has always seemed large, even to many professed biologists; and individual human conduct remains as much of a mystery as ever. It is not difficult to understand the main historical and psychological origins of the belief in the completely deterministic universe. By Laplace and other eighteenth-century mathematical physicists the unambiguity and complete determinateness of logical or mathematical reasoning was assumed to apply not only to the formulæ describing the behavior of physical objects, but also to the actual behavior of the objects themselves, considered as independent facts in an external nature. The formal correspondence was regarded as equivalent to a complete correspondence; natural behavior then became as invariant and subject to rigid rule as the behavior of the terms in mathematical equations; and there seemed to be ample experiential confirmation of this conclusion, especially from the facts of astronomy.

But since it is now realized that all scientific representation is abstract and approximate, and in no sense a complete replica of natural reality, the ascription of complete determinateness[2] to nature, extending to its minutest inner details, is no longer a logically necessary one; it becomes, in fact, subject to the uncertainty attending all extrapolation in natural science. The scientific search for determinateness will proceed as formerly; but it now recognizes the possibility that in any single natural event arbitrary or individual factors may enter which are not (or not yet) subject to rule. In an evolving universe not all of the rules are yet made; stable stations are reached from time to time; but so long as nature exhibits evolutionary advance there must be at least some indetermination, since when a thing happens for the first time we can not point to any permanent or constantly acting pre-existing factors which determine unequivocally its special particularity. The unpredictable is such

[1] Professor F. G. Donnan, in a paper contributed to *Scientia* in 1918, points out the contrast between the law of action of the individual and that of the multitude in any statistical assemblage, and suggests that the action of individual atoms may be of decisive importance in biological phenomena (*Scientia*, 1918, Vol. XXIV, p. 282).

[2] Complete determinateness would be the rigid exclusion of alternatives, i.e., the existence of only one possibility of action at any given juncture.

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not merely because of incomplete knowledge, but because there actually exists an element of spontaneity or freedom from rule in each natural occurrence. The residuum of natural fact not subsumed under the scientific formula thus furnishes a field in which the novel or indeterminate may assert itself. The limits of possible exactitude in physical measurement are now precisely defined by the Heisenberg principle; and although some physicists may still maintain (in fact do maintain) that this experimental disability need not imply the absence of strict determination beyond the limits thus defined,[3] the burden of proof is on them. We can at least see how the belief in complete physical determinateness arose historically, through an overestimate of the degree of correspondence between the scientific concept or formula and the natural fact itself; and the recognition of large-scale causality as statistical, while not depriving it of its validity in our usual dealings with nature, allows for a certain measure of external indetermination in the individual units composing the statistical aggregate. If the determination of any large-scale event depends on the action of one or a few smaller component units, which, individually considered, are subject to small-scale determination, the event ceases to be predictable or deterministic in the former mechanistic sense. This kind of condition apparently corresponds to the one actually existing in living organisms.[4]

All experience indicates that events can occur and possess constant or predictable characteristics, or even existence, only if certain invariant controlling factors are present. This is a first principle of experimental science. Thus physics assumes invariance in the energy-content of an isolated system, or in the general geometrical conditions determining the spatio-temporal relations between events. But the particularity of any natural event seems never to be completely determined by the immediate conditions under which it occurs, although in simple physical events the determination may appear to approach very closely to completeness. In more complex cases we find that a variety of different events may occur under conditions which are experimentally kept as constant as possible. This is true even of a relatively simple process like Brownian movement. Apparently it is not sufficient to establish or render constant the conditions necessary for any event in order to ensure that event and that event only; i.e., the conditioning of an event is to be distinguished from its complete determination (a distinction not always made); more than one event may occur under the same conditions.[5]

[3] *Cf.* the recent paper of Alfred Stock, "The Present State of the Physical Sciences," in *Science*, April 1, 1932, Vol. LXXV, p. 345.

[4] R. S. Lillie, *Science*, 1927, Vol. LXVI, p. 139.

[5] *Cf.* the recent paper of Professor Percy Hughes, "Forms of Generalization and their Causes," this JOURNAL, 1930, Vol. XXVII, p. 281.

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This would imply that in any single natural occurrence an element of spontaneity or novelty is always present, conjoined inseparably with the necessary element of order, constancy, or stability. The typical experience is that any event when scrutinized closely shows a combination of constant and variable factors. When we make any physical deduction we assume that at least the general characteristics of the space-time order remain invariant throughout the phenomenon under consideration; yet any single electron event shows a variability that apparently is to be ascribed only to inner conditions, since we find that fixing the external conditions does not assure complete constancy. Thus every physical event appears to have within itself an element, greater or less, of arbitrariness or freedom from fixed rule. It is a matter of indifference whether we characterize this general condition verbally as indeterminateness, or as contingency, or as determination not referable to outside causes. It may be defined as that part of the individuality of the event which expresses its inner spontaneity.

This brings us to the consideration of directive influence. Is there an *inner* directive influence in atomic phenomena,[6] as distinguished from the directive influence which one physical unit demonstrably exercises upon another or others external to it? The experimental evidence indicates the existence of such influence, although the factors appear to be beyond the possibility of external (i.e., physical) observation at present. A radium atom emits electrons and alpha particles at intervals (long for the individual atom[7]), without regard to the external conditions. The determination of each such event is internal; the kinetic energy of the emitted particle comes from the transformed inner energy of the atom. This intra-atomic energy is enormously large; how it came to be so concentrated is unknown; but on any evolutionary interpretation of nature some process is implied by which energy has been centralized in an indefinitely large plurality of discrete units or entities each with a certain independence or autonomy of its own. These units appear in the spatio-temporal scheme of science as atoms and electrons, stable physical centres of action, formerly considered indestructible. In this sense physical science is in formal agreement with the monadic conceptions of Leibniz and his successors. Physical science, however, views atomic phenomena from outside and has nothing to say with regard to any possible intrinsic (e.g., psychic)

[6] I.e., an influence originating intra-atomically and determining unequivocally the spatial direction and the time of transfer of an impulse to action (e.g., a quantum of energy) from one particular atom to another.

[7] Of the order of some hundred years on the average, as given by the ratio between the number of atoms in a given mass of radium and the number of particles which it emits in a given time.

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quality or "inner life" possessed by the ultimate units. Granting that this inner quality exists, the only physical evidence of it would be some influence exerted on other physical units, also externally observed, a process involving the interchange of energy units or quanta.[8] The inner energy of the atom, as radioactivity shows, may express itself externally (if at all) only at intervals and under certain physically unknown conditions. What is happening inside the atom in these intervals? We may point to the inner life of human beings as an analogy; but at present the kind of consciousness associated with a complex living organism, as each man experiences it in himself, can not be derived by any plausible hypothesis from the summation of a supposed inner life of atoms. Nevertheless the external indeterminateness of voluntary action and the innate variability of individual atomic or electronic phenomena are facts which would appear to have a common basis. Apparently a certain inner spontaneity or externally unconditioned activity is a feature or property common to all individualized natural entities. Again we recognize the conjunction of permanent or stable (law-abiding) factors with spontaneous, originative or individual (non-repetitive) factors as a fundamental characteristic of natural reality.

It is evident that any single directive influence is asymmetrical, also that statistical symmetry is perfectly compatible with asymmetry in the action of units. The action of molecules in a gas at equilibrium is statistically symmetrical. If we compress the gas we introduce temporarily an asymmetric influence. During the compression there is a preponderant motion of molecules in one direction, toward the interior; at equilibrium symmetry is restored, and there is no further progressive change. Asymmetric action, i.e., action in a certain definite direction at a certain definite time, is involved in any physical change.[9] Randomness is a characteristic of non-guided atomic motion; during any time interval (not too small) events happen equally and impartially in all directions without choice or selectiveness; the mathematical treatment of the laws of energy, especially the second law, presupposes such randomness. But in

[8] This is well stated in a recent address by Sir Arthur Eddington, "The Decline of Determinism," published in *Nature* of February 13, 1932, CXXIX, 233: "Whenever we state the properties of a body in terms of physical quantities, we are imparting knowledge as to the response of various external indicators to its presence and nothing more. A knowledge of the response of all kinds of objects would determine completely its relation to its environment, leaving only its un-get-atable inner nature which is outside the scope of physics. Thus if the system is really isolated so that it has no interaction with its surroundings, it has no properties belonging to physics, but only an inner nature which is beyond physics" (p. 239).

[9] *Cf.* Pierre Curie: "A phenomenon can only occur or even be propagated if a dissymmetry exists." (Quoted in C. E. Guye's *Physico-chemical Evolution*, New York, E. P. Dutton & Co., p. 163.)

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nature, considered as a whole, there is a definite preponderance of asymmetric action; the fact of evolution is sufficient evidence of this. This asymmetry implies (physically) the concerted action of many atomic units, i.e., a general directive influence of some kind, exerted on a large scale. We may infer that without directive action nature would be homogeneous, or at least its components would be uniformly distributed.

A summarized statement of the general physical conditions prevailing in the cosmos might run as follows. We observe that, although all space is pervaded by radiant energy, coming from all directions, local concentrations of energy, protons and electrons, sparingly distributed, form the greater part of the physical world. Typically these form large atomic aggregates or material systems. The origin of these concentrations is unknown, but it is clear that each unit as well as each aggregate represents a localized directive or asymmetrical action of some kind. Directive action would thus seem to be fundamental in physical nature; and apparently it is intensified, or reaches a maximum, in those natural systems which we distinguish as living organisms. These form a relatively small part of the cosmic material; they are special centers of growth and chemical activity, self-perpetuating systems, characterized by a unique complexity of structure and behavior, and evidently representing the products of a long continued evolution.

In living organisms the experimental evidence of asymmetric action, having its point of application in the individual molecules, is quite definite and familiar to all biologists. Discrimination between right-handed and left-handed asymmetrical molecules is a basic feature of metabolism, both in animals and plants. The proteins are complexes of asymmetrical amino-acids; each protein molecule thus exhibits within its own small volume a high degree of structural diversity. This diversity forms the basis of specificity,[10] with all that this implies with regard to the structural and physiological differences between the species of animals and plants. Structural asymmetry presupposes a corresponding asymmetry in the ultimate structure-forming processes, i.e., in the chemical reactions by which the biochemical compounds are built up from the materials of the environment. These materials may be simple compounds uniformly distributed and showing no molecular asymmetry, as in the case of plants; the source of the asymmetry is thus internal, within the organism itself. This kind of selectiveness or asymmetrical choice in chemical reactions is peculiar to living organisms or to the products of their activity; at least we have no certain knowledge of its exist-

[10] This is the view of most biologists; for a summary of the evidence *cf.* (e.g.) Jacques Loeb's *Organism as a Whole*, New York, G. P. Putnam's Sons (1916), Chap. 3, "The Chemical Basis of Genus and Species."

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ence elsewhere in nature. We come here to a long recognized distinction between living and non-living systems. In the year 1860, Pasteur refers to "the molecular asymmetry of natural organic products as the great characteristic which establishes perhaps the only well-marked line of demarcation that can at present be drawn between the chemistry of dead matter and that of living matter." This subject is discussed in the well-known address of Professor F. R. Japp before the British Association in 1898,[11] in which he sums up his own final conclusions as follows: "at the moment when life first arose a directive force came into place, a force of precisely the same character as that which enables the intelligent operator by the exercise of his will to select one crystallized enantiomorph and to reject its asymmetric opposite." This statement has been widely interpreted as making a stand for a vitalistic as distinguished from a purely physico-chemical interpretation of vital phenomena, and it aroused much interest at the time.[12]

What is here interesting is that a small-scale directive activity, expressing itself in the behavior of single molecules, is postulated as the basis of both selective metabolic action and acts of will. The uniform or symmetrical distribution of single atomic actions, which would result from purely chance conditions, is replaced by an activity having a definite asymmetric trend. This asymmetry can not be referred (at least ultimately) to external conditions. Its source would thus be intra-molecular or intra-atomic; this would place it in a similar category with the conditions determining the emission of electrons at intervals from a radioactive atom; each electron or $\alpha$-particle is emitted in a definite direction, and the emission is uninfluenced by external conditions.[13]

It is, in fact, well recognized in physical chemistry that individual molecules in a molar aggregate, or even microscopically visible particles as in Brownian movement, may, during a short space of time, show asymmetric activity. Symmetry appears only when large numbers and large times are considered; that is, it is statistical symmetry. The observations on Brownian movement show that a small group of particles (similar to large molecules in their order of size) may give rise, under constant external conditions, to an indefinitely large

[11] F. R. Japp, "Stereochemistry and Vitalism," *Nature* (1898), CVIII, 452; he cites Pasteur as above.

[12] It was followed by an active correspondence in the columns of *Nature*, in which Herbert Spencer, Karl Pearson, and other well-known scientific men took part.

[13] Some qualification may be needed here because of the recent experimental work from Rutherford's laboratory showing the possibility of atomic transformation by bombardment with $\alpha$-particles at high voltage. Intra-atomic factors would appear to be not entirely exempt, under all conditions, from external interference.

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number of groupings or configurations which at times may have a high degree of asymmetry. The determination of the precise configuration existing at any given time is not to be accounted for by general principles such as the laws of thermodynamics, which expressly rule from consideration the special actions of individual molecules. A selective or asymmetric distribution may occur, at least temporarily, without infringing these conditions. This fact may (from one point of view) be regarded as an exemplification of the philosophical rule that particularity (= individuality) is not amenable to general principle or classification except in part. Its tendency is to escape restrictions, such as those imposed by conditions established in past time. The non-amenable residuum represents the field within which physical indeterminism or absence of external determination may exist. Hence at each station attained in evolution a certain freedom exists for future development. But what it is important to note, in relation to the present subject of discussion, is that only the microscopic or sub-microscopic elements of matter can have their motion thus controlled unequivocally by internal as distinguished from external conditions. In this "small-scale" field we have experimental evidence of an externally indeterminate distribution of activity or influence; and it is conceivable that influences of this type, made persistent and directive (instead of temporary and random) through some special feature of vital organization, may control the special arrangement adopted by certain groups of molecules or protoplasmic particles and hence determine the detailed course of the metabolic process. The predominance of asymmetric syntheses in living matter is one expression of a directive influence of this kind, and may be taken as an illustration of the importance of small-scale action in living organisms.

I am aware that the asymmetry of the organic syntheses in living matter is referred, scientifically, to the asymmetry of the conditions under which the reactions occur. Among these conditions are the presence of other asymmetric molecules, asymmetric catalyzers and asymmetric structural conditions. The polyphasic structure of colloidal systems and the presence of electrically polarized surfaces or membranes are additional factors making for asymmetry. In general we may say that the building up of any complex structure presupposes the presence of asymmetric conditions during its formation; as Japp points out, asymmetry once established can beget asymmetry. But all the special conditions at present existing in the various forms of living matter have an evolutionary background; and one can only speculate as to the original conditions determining the choice between two enantiomorphs. As physical or external factors have been suggested the conditions of radiation, the action of polarized light (e.g., of moonlight), even the asymmetry of the earth's motion (west to

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east, not east to west). In any case the reference is always to some pre-existing asymmetry and an infinite regress is implied. The ultimate problem becomes again the problem of why nature is not homogeneous.

It is interesting to note at this point that certain of the early materialists, including Lucretius, thought it necessary to ascribe a certain measure of indeterminacy to atomic motion, apparently in order to reconcile a mechanistic conception of nature with the fact of free will. This has been pointed out quite recently by Professor d'Arcy Thompson; [14] and we may compare the slight swerving of the atoms from a mechanically predetermined path ("exiguum clinamen") as postulated by Lucretius,[15] to the possible range of physical indeterminacy as defined by the Heisenberg principle. There is a certain irony in the fact that the assignment of fixed limits to the unequivocal mechanical determination of events has only recently received its final justification at the hands of experimental physics itself.

But the absence or subordination of mechanical determination (in the formerly accepted sense) in single atoms does not mean the absence of any kind of determination. The problem is rather as to the nature of the inner determination to be assumed, and as to whether we are in position to define it in any clear and scientifically acceptable terms. We may agree that the classical or mass-action types of determination represented by large-scale physics and the greater part of physical chemistry are insufficient to account for the special kind of organization and activity exhibited by living matter, and that a reference to small-scale determination is required; but how are we to conceive this latter type and its mode of operation?

Biology has consistently attempted to solve its problems, especially its basic problem of individual development, by reference to smaller and smaller elements of structure. From chromosomes and genes we pass by successive stages to single molecules; thus in biological specificity the special complexity of protein molecules is regarded as determinative, and immunological reactions show that definite physio-

[14] *Nature* (1928), CXXI, 565. He remarks on "a strange point of the Lucretian doctrine, that 'exiguum clinamen' by which the atoms swerve ever so little, and only now and then, from the straight determined path and so are brought into collision, which collisions are the starting point of a new order of things. Thus a certain freedom of action is possessed even by the atom, and is the first faint adumbration of our own soul's free will—'unde haec est nobis innata potestas.' Here Lucretius qualifies the more relentless materialism of Democritus. . . . It reminds us of Newton's famous scholium: 'a caeca necessitate, quae eadem est semper et ubigue, nulla oritur rerum variatio.' "

There is an echo of this in C. S. Peirce: "mechanical law can never produce diversification." (*Cf. Collected Papers*, edited by Hartshorne and Weiss, Harvard University Press, Vol. I (1931), paragraph 174.)

[15] *De Rerum Natura*, Book 2, line 292.

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logical characters may be bound up with the special configuration of these molecules. In all such procedure there is implied an ultimate reference to factors determining the action of single molecules, and hence to the conditions determining the transfer of electrons from molecule to molecule; in the last analysis directive internal factors in the atoms themselves must be assumed. But since the intra-atomic processes are not open to external observation, physical analysis is arrested at this point and experimental method would seem to be at a loss.

Can we gain light on our problem indirectly by a consideration of the general features of conscious or psychical processes, i.e., processes observable introspectively, but not externally? Selectivity or discrimination, combined with unification or synthesis, would seem to be the most general characteristics of the mental or psychical as such; and the directive and unifying property seen in the vital processes (as viewed objectively) may seem to have its counterpart here. But such considerations are vague and can scarcely be called scientific at present.

A question more open to scientific approach is the following. How can the inner factors of large numbers of atoms be combined, unified, or synchronized in such manner as to determine external directive action on a large scale, such as that shown by animals in their normal activities? This question is related to the one raised by Eddington with regard to "key atoms."[16] As I pointed out in a preceding paper,[17] a single molecule may conceivably originate large scale action through processes of transmission combined with amplification, of the same general kind as that shown in the various forms of protoplasmic response, including the nervous. But this is a simple spreading effect, of which the most familiar example is an explosion originating in a spark, and by itself is scarcely sufficient, since what is involved in any act of directive behavior in higher animals is not merely the action of single transmissive units, but the combined activity of organized groups of cells, especially nerve cells. Groups of associated cells can, however, be conceived as working in unison under the influence of a transmitted influence of the electric type; in fact, instances of this kind are well known to biologists.[18] These, however, are large-scale effects. The question is, can a directive influence, originating intra-atomically, be assumed to affect a relatively large number of molecules, and then secondarily, through the intermediary of these reacting molecules, larger groups of nerve

[16] *Nature of the Physical World*, p. 313.

[17] This JOURNAL, 1931, Vol. XXVIII, p. 561.

[18] Groups of independent motile cells, such as spermatozoa, may show synchronous action under certain conditions. *Cf.* my volume, *Protoplasmic Action and Nervous Action*, University of Chicago Press (1923), p. 392, for further details and discussion.

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cells having definitely organized structural and physiological relationships? Apparently groups of atoms acting in concert would have to be assumed as the initiatory factors in such a sequence. The ultimate determination would then be referred to special intra-atomic conditions, and a transmission of influence between neighboring atoms would be required.

In the face of such a problem we may have to abandon physical models of the usual visual type, and conceive the constant or scientifically definable relations, especially with regard to the initiatory intra-atomic action, in some quite different manner. This, in fact, is now being done in physics; mathematical expressions having no recognizable application in our concrete experience (like the square root of minus one) may have a definite representative value in the relativistic treatment of quantum phenomena or thermodynamics.[19] It should also be remembered that a peculiarity of vital phenomena in their higher development is that both objective and introspective means of observation are available. What is lacking in the one type of observation may be supplied by the other type; i.e., physiology may be supplemented by psychology. The need of proceeding critically is, of course, always to be insisted upon. This can be done, at least up to a certain point, without recourse to mysticism or dispensing with scientific rigor. A primary problem in physiological analysis is to determine which vital characters are to be referred to the large-scale types of physical determination (mechanical or statistical determination), and which to the small-scale types (intra-atomic or individual quantum determination). Evidently any directive action originating intra-atomically and acting in or between single molecules must be referred to the latter class; and this action appears to have characters not representable by models drawn from our experience of the external world.

The general problem of the mind-body relationship enters at this point. Eddington raises the question whether the mind acts on the body through the agency of one or two "key atoms" which control the behavior of a multitude of other atoms, and he concludes that this is not possible unless the "mind" has the power to set aside the statistical laws of thermodynamics. This possibility he seems to regard with doubt, and yet not entirely to reject. Instead of the usual unorganized behavior of the large atomic group, acting in accordance with statistical rules—each atom preserving its independence as assumed in statistical theory—he supposes that in living organisms there may be some kind of interdependence of the individual atomic actions which is not present in inorganic matter. He speaks of "the broader unifying trends of the mind-stuff," and "some kind of physi-

[19] *Cf.* the recent address of Professor R. C. Tolman, "Models of the Physical Universe," *Science*, April 8, 1932, LXXV, 367.

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cal substitute for the Ego." The unification required by the facts of individual or personal control is here conceived after the analogy of mental unification. This, however, is a statement of the problem rather than a solution. The possibility of a directive action controlled inwardly or intra-atomically is assumed, and this action is regarded as dominating in some unknown way the whole large-scale organism. The single atom may be "free," but not the multitude of atoms. In the latter case the statistical summation, assuming it to occur in the usual symmetrical manner, would annul any possible directive action.[20]

Is there any scientific way of evading this difficulty? In physical chemistry a unified or synchronous action affecting large numbers of atoms and molecules may be obtained experimentally through electrical influence. This kind of physical influence, together with radiation, is the characteristic form of "distance action" in nature. For example, all of the molecules at the surface of an electrode are affected simultaneously and similarly when a current passes through an electrolytic cell or battery. In view of the dependence of nervous stimulation and transmission upon electrical conditions, this possibility is one to be considered. The "key atoms" may, by altering local electrical conditions, e.g., by giving rise to local currents at the electrode-like surfaces of the living protoplasm, be the means of activating indirectly a large area.[20a] These large-scale effects would be produced through the intermediary of amplifying and relay arrangements, in which the necessary transmissions would be of the spreading or protoplasmic (nervous) type; such transmissions apparently depend on the formation of local bioelectric circuits. Transmitted influences of this general kind would be selective or directive in their final incidence if the initiating atomic action were directive. The precise effect produced on the whole organism would depend

[20] Eddington: *Nature of the Physical World*, pp. 313 ff.; *cf.* also "The Decline of Determinism," *Nature, loc. cit.*, p. 240.

[20a] If the key atoms, whose activation initiates stimulation, are situated at a surface having the properties of an electrode surface, all will be affected alike by the passage of an electric current across the surface. According to modern physiological conceptions, the semi-permeable membranes of the irritable elements are the site of the electrically sensitive key reactions of stimulation; and transmission consists in waves of electrochemical change passing along such membranes. It is therefore consistent with physiology to assume that groups of similar molecules similarly oriented at the surface of a protoplasmic membrane are the groups first affected by any stimulating agent, e.g., by an electrical influence sufficiently intense to overpass the threshold. The key atoms would occupy definite positions in such molecules. Similarly, a sufficient change in one key atom would initiate a transmitted effect because of the accompanying electrical effect on other similarly situated atoms. A physiological basis for unificaiton of activity is thus conceivable, having characters representable by a model of this type.

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upon the direction in which the quantum transfers in the "key atoms" were effected. We should have to assume a dichotomy at certain points in the irritable and conducting structure, permitting alternative directions of action at these points. A further requirement, already mentioned, would be the unification or summation of a large number of single atomic actions; this is a necessary condition for the intensification of the local initiatory effect, and apparently could be effected by electrical means, as above indicated. Whatever conditions are assumed, it is evident that they must be consonant with the facts of physiology. We have definite physiological evidence (e.g., in vision) that a stimulation or activation involving only a few elements may fail to reach the level of affecting consciousness, while if a few more elements are activated (i.e., if the "threshold" is overpassed) a definite sensation involving physiological response follows.

In general, the hypothesis here outlined would refer the ultimate directive action to intra-atomic influence, this influence being transmitted and amplified, under the special structural conditions prevailing in the neuromotor system, in such a way as to control the large-scale action of the whole organism. The precise details of a sequence need not concern us at present; they are, in fact, a subject of speculation and not of scientific knowledge. The fundamental condition required for making such control possible would be the presence of a constant correlation between the intra-atomic processes and the effects produced externally by these processes. The physical evidence indicates that intra-atomic activity needs not be manifested externally (i.e., in a physically appreciable way) except at intervals; the example of the radium atom illustrates this. Yet the high energy-content of the atom indicates the existence of a continual inner activity or inner tension; we also know that this energy, under the appropriate conditions, may assert itself externally, i.e., physically. In the transmission of physical influence units of action (quanta) are transferred from atom to atom; the vital directive activity would consist in controlling the time and direction of this transfer.

Some of the more general implications of the present discussion may now be briefly indicated. The physical analysis leading to atomism has its philosophical counterpart or analogy in monadism. Each physical fact or unit has its own peculiar quality of self-assertiveness, unequivocality, or individual uniqueness, also its own capacity to influence, or be influenced by, other units. Isolation (=persistent individuality) or inwardness, and also some capability of interaction, implying the possibility of innerconnectedness and intercommunication, thus appear to be fundamental characteristics of the ultimate natural units, as well as of the larger aggregates which they compose. Briefly, we have on the one hand the insula-

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tion of units, and on the other hand the responsiveness of each unit to influences exerted by others; these two conditions from the necessary foundation or prerequisite for definite or regular action of any kind. Insulation corresponds to self-hood, in that it involves the possession of a certain inalienable or persistent inner character or quality. To this insulation corresponds physically the large internal energy of each atomic unit. In the transmission of influence between atomic units (according to the prevailing conceptions of physical causation) one or more quanta disappear from one unit and simultaneously reappear in another or others. The energy thus transferred is insignificant in quantity compared with the total energy of the unit; that is, one atom influences another without undergoing essential change in its own internal nature.

This insulation of the atomic units, each with its large store of internal tension or energy, is a fact to be accepted and not explained at the present time. Physical methods of investigation fail us here. It seems clear, however, that unless each element of nature possessed the property of remaining unalterably itself, unaffected in its essential inner nature by external events, any definite action or regularity of occurrence would not be possible. The inner stability of the atom furnishes the element of constancy or permanent order required for the exhibition of its fixed or characteristic modes of activity. In other words, it represents the constancy of condition under which a certain range of freedom or externally undetermined activity becomes possible.

It is evident that the scientific conception of nature as composed of discrete or individualized elementary units, and of natural action as dependent on the preservation by each unit of its characteristic identity, offers a close correspondence, at least in form, with the monadic conceptions of Leibniz.[21] Although the theory of monads is not in itself a physical theory, its main contentions and its logical consequences, if it is true, should conform to physical fact. Physical science, however, departs widely from Leibniz's theory in one important respect. Its results seem definitely inconsistent with the conception of a "pre-established harmony," or any other kind of closed universe, since this would imply complete determinateness in the interaction of units. The element of variability or partial indeterminateness appears to be innate in atomic behavior; and we may attribute this character to inner factors having a certain primordial autonomy or freedom from external influence. The conditions

[21] The affinities between the theory of monads and the modern scientific view of nature are discussed in an illuminating manner in Professor Wildon Carr's recent edition of the Monadology (*The Monadology of Leibniz*, Favil Press, London, 1930).

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required for a genuinely novel and at present undetermined future order of events would thus seem to be inherent in natural reality.

In the world of classical physics it is assumed that any portion of nature which is isolated reaches sooner or later a state in which it remains permanently unchanged. Such a system is shielded against outside influence, i.e., against any factors of change which originate outside of itself, and its determination then becomes purely internal. If it had no inner spontaneity it would tend toward permanent equilibrium.[22] It is of interest to note that living organisms, while maintaining themselves through interchange with their environment, exhibit at the same time a high degree of insulation against that environment, as shown by their various protective structures and activities. Associated with this insulation is a unique development of internal determination or spontaneity. Hitherto in biology we have aimed chiefly at explaining these and other vital characteristics on the basis of the externalism of classical physics, but this now appears to be insufficient. Intra-atomic factors of determination are to be regarded as primary and fundamental.

Science now recognizes more clearly than before the necessarily incomplete character of any philosophy of nature based solely on the observed and calculated features of the external world. Results gained by external perception, the observational side of natural science, give only indirect evidence of the nature of extra-perceptual reality, although quantitatively considered (i.e., in terms of total energy-content) this is the largest part. The perceptual apprehension of any object (e.g., by vision) gives its position, its movements, its interactions with other objects; the small fraction of transferred energy reaching the observer's sense-organs furnishes sufficient indicia for this. But the relatively large intra-atomic energy is not manifested externally except indirectly and intermittently, and under conditions physically unknown at present. It is in this field that the spontaneous or originative capacity of nature, so largely developed or centralized in living organisms, is chiefly to be sought.

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[22] In a recent paper by the physicist, Dr. P. Jordan of Göttingen, "Philosophical Foundations of Quantum Theory" (translated in *Nature*, 1927, Vol. 119, p. 566), he discusses physical causality as illustrated by the behavior of atoms in an isolated space (closed "box"). For the unique determination of conditions inside the box he says expressly: "We should have to exclude the case that there is a living organism inside the box; . . . the notion of determinism must be formulated differently for biology and physics."

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# THE ANALYSIS OF THE SUBJECT-PREDICATE PROPOSITION

THE common opinion is that a sentence like "This pen is blue" expresses a SP proposition.[1] But the meaning is really a conjunction of two propositions, viz., *This is a pen* and *This is blue*, because it is their truth-function.[2]

It will generally be agreed that *This is blue*, the simpler of the components, is a SP proposition, in which the demonstrative symbol "this" stands for a particular, the adjective "blue" for a character, and the tie "is" for a connectedness between the particular and the character, which is either entailed by or identical with the relation of characterizing.[3] Different interpretations arise when one attempts to explain *how* the symbol "this" functions in relation to the particular. There are two main alternatives. According to the first the particular exists *outside* the proposition so that the symbol "this" merely *refers* to it. The reference in its turn is interpreted in two ways. One of these is the assertion that the symbol "this" has only the significance of referring to a particular without actually referring to anything unless supplemented by the predicate which describes the particular. In other words, the subject only indicates that the reference is present, the reference itself is realized by the complete proposition: "its reference *is* description." This is Professor Loewenberg's analysis, but he himself shows the embarrassing consequence to which it leads: "either (a) the only reference of judgment is to what it itself describes . . . , [in which case] there can never be any *false* judgment . . . , or (b) its reference is

[1] The shorthand symbol SP will be used for "subject-predicate." Propositions such as (1) *All (some) pens are blue* and (2) *The (a) pen is blue* only appear to be SP propositions because of their verbal expression. The particular propositions are conjunctions of two propositional functions prefixed by the phrase "there is an $x$ such that . . . ," while the universal propositions are denials of such conjunctions. The propositions of the second group being concerned with definite or indefinite descriptions, likewise involve propositional functions.

[2] In a footnote to his interesting article, "The Metaphysics and Logic on Classes," Professor P. Weiss attempts to deal with *This book is red* on the assumption that it is a simple SP proposition and it is this that leads him to unnecessary complications. *The Monist*, Jan., 1932, p. 119.

[3] It should be noted that even *This is blue* may not be a simple SP proposition if Professor C. H. Langford is right that it means *This is of some determinate shade of blue*. I propose, however, to deal with *This is blue* as if *blue* were a name of a specific shade. To dispense with any doubt the reader may substitute *This is black* for *This is blue*. It is true that even *This is black* entails *This is of some extension*, but this merely means that the first proposition is an abstraction from the actual situation. As an abstraction it is not indeterminate, since the specific shade concerned need not depend on any specific extension. C. H. Langford, "General Propositions," *Mind*, Oct., 1930.

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to something else not described by it . . . [and then] there can never be any *true* judgment.'' Now the conflict between the conclusion of the dilemma and the fact that there are true and false SP propositions is in itself a refutation of the analysis.[4] Another decisive objection is that the same predicate is attributable to different particulars and so does not indicate, by description, one thing to the exclusion of others. The second interpretation of reference likens the demonstrative symbol to a gesture or signal, such as an arrow, so that a more striking way to express *this is blue* would be "← is blue." But this expression is obviously not a proposition at all unless it were taken together with the particular to which the arrow is known to point. Then there would be an additional proposition to the effect that *This (particular) is being indicated by the arrow.* That the additional proposition contains the particular should be recognized in order to avoid an infinite regress. But then there is no reason to believe that the symbol "this" functions differently in the original proposition. And so the second main alternative is that the particular is a constituent of the proposition *This is blue.*

The particular-constituent must be capable of being completely exhibited in a single SP proposition, since otherwise the proposition would have to refer to something beyond itself. This excludes events or continuants (if there are any) because they as a rule occupy too much space and time to be objects of immediate intuition and therefore of a single proposition. The sense-data form an exception, for by definition they are events displayed in the field of immediate perception. But sense-data fail as subjects of SP propositions in at least the following respects.

1. Some particulars properly designated by the demonstrative symbol can not be perceived through the senses at all, viz., emotions, wishes, etc.[5] Even sensations are not always definite and clear-cut sense-data. To illustrate, consider *This is blue* when it is about the sky.

2. A sense-datum is the private property of the percipient. Hence if it were a part of a SP proposition, the latter would be incommunicable.

3. If "this" were to stand for a sense-datum, the structures of *This is blue* and *This is a pen* would be decidedly different in spite of the similarity of the sentences. The first proposition would be an analysis of the particular, since the subject is related to the predi-

[4] I take it for granted that the dilemma follows from the analysis. Mr. Gotshalk attempted to deny it, but Professor Loewenberg easily disposed of his arguments. This JOURNAL, Vol. XXVII, p. 544 ff.

[5] Even characters, relations, and propositions, in spite of being universals, are "particular in the sense of each being just what it is and distinct from others. As such they are designated by demonstrative symbols.

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cate as the whole to a part. The corresponding terms of the second proposition are related as a part to the whole; hence its real meaning is some such proposition as *This is a manifestation of a pen*, which (when expressed symbolically) is seen to be obviously a compound proposition.

4. A sentence of the type "This is blue" is not usually employed to express analysis. At any rate the same sentence is most often used whenever one wishes to express the relation of characterizing. And then the demonstrative symbol does not stand for the whole sense-datum, because the complex nature of the latter can not be characterized by a simple adjective such as "blue." The contention that the relation of characterizing is merely analysis is untenable: it implies that there are no false SP propositions; for in analyzing the subject, a determinate sense-datum, one can not select for predication any determinate adjective which is not there.

The source of all these difficulties is the identification of the particular with the sense-datum which is something taken *together* with all its characters. The remedy is in interpreting the particular as something *apart* from its character, i.e., as the residue which is left when one abstracts the nature from an entity. On this interpretation: (*a*) the SP proposition obviously would express the relation of characterizing; (*b*) the propositions *This is blue* and *This is a pen* would differ only in so far as "pen," unlike "blue," is a complex description; (*c*) there would be SP propositions not only about sense-data, but also about other events and, in fact, about anything having particularity; (*d*) there could be false SP propositions, because anything can be predicated about the subject whose nature is not disclosed. According to this conception the reality of particulars is proved by considering that several events may be exactly alike and yet distinct. The "otherness" of events is their "particularity."

The proposed analysis gives additional evidence in favor of taking the predicate to be a universal.[6] For the subject takes care of whatever is particular in the fact expressed by the SP proposition. Accordingly there is no need to hold (as certain logicians do) that the

[6] To the various objections against the nominalists I wish to add the following. It is a fact of personal experience that in the field of immediate perception there are two entities exactly alike in nature, e.g., two two-cent stamps. That under closer inspection one might detect some difference does not undermine the fact that in the original experience no difference was found. It is important to emphasize that only data exactly similar would prove the reality of universals. Partial similarity (contrary to a common opinion) does not imply that there are universals in respect of which the things are similar: the determinates under the same determinable may be of different degrees of similarity without having any property in common.

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predicate stands for an instance of a universal and not for the universal itself; nor is it plausible to deny the reality of universals altogether.

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## BOOK REVIEWS

*Introduction to Philosophical Analysis.* JAMES BURNHAM and PHILIP WHEELWRIGHT. New York: Henry Holt & Co. 1932. Pp. 462.

Here is a philosophy book written in the spirit of modernity—a book with an unacademic, metropolitan atmosphere; alive, rapid, colloquial. Since it has, quite characteristically, no preface, the reader can only guess at the purpose it is meant to serve, and by all outward symptoms it appears to be intended for use in introductory college courses. The subdivided chapters, occasional paragraph-headings and business-like exposition leave it none of the essay-like qualities which are supposed to appeal to an anomalous person called "the general reader," and the absence of original or controversial matter removes it from the class of professional contributions, but both of these characteristics make it desirable for elementary study. *Ergo,* it is a textbook.

Certainly our students need a book of this sort, which begins with methodological considerations, calls attention to dangerous fallacies such as bad definition, hypostatization of concepts, misleading analogies, fantastic images and ideologies, and then proceeds to illustrate *correct* philosophic method by treating actual problems of philosophy. The method of philosophical analysis has much to recommend it, although its protagonists sometimes fail to realize that a strict use of logic in philosophy does not entail a method wholly, or even predominantly, analytic. *Analysis* of our common-sense ideas usually serves only to show that they have no consistent structure; philosophy, therefore, is essentially a work of logical building—not an analysis, but a reconstruction of our ideas of things. Fortunately, the procedure of the book makes this clear to anyone who would discern it, and the title, which perpetuates the superstition that all rational thinking is analytic, in this respect belies the content.

The approach which the two authors have taken merits the whole-hearted approval of anyone who believes that philosophy is a systematic pursuit, to be studied step by step, not in a tantalizing jumble; but the way they have carried out their campaign raises another question. The task they have set themselves is a great and difficult one, and the execution, on the whole, falls short of the ex-

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cellent conception. The value of a book which makes no original contribution to knowledge must lie in the clarity, accuracy, and strict sequence with which it presents old ideas to new initiates; a textbook must be, above all, well-thought and well-wrought. It should omit all ideas which are not relevant to the argument at the point of development which it has reached. The student is prone enough, anyway, to wander off on byways of free association. If we illustrate our general statements with examples which can not have meanings more distinct and familiar to the reader than the ideas they illustrate, we only invite him to fill his mind with silly images he takes for "examples." Thus, a cursory mention of "the so-called FitzGerald contraction, a theory which was formerly used to explain certain anomalies in physics," can hardly serve a college undergraduate as an example of anything, even though he may have met the term "FitzGerald contraction" before—especially as this same student is later (in Ch. 7) given a tediously elementary account of classical physics from which we must infer that he is not expected to know even the Newtonian conceptions of matter. Throughout the book one finds a tendency to talk about things the authors can not undertake to clarify. It might be argued, of course, that this serves to stimulate the student's curiosity; but it is far more likely to flatter him into thinking that he knows enough to read the book. There is an unfortunate tendency in our educational system to fill people's minds with catchwords, and flatter them into believing that because they have often heard about Relativity or Evolution on non-Euclidean Geometry, they have some knowledge of these subjects. This "catch-word fallacy," as it might be termed, is very apparent here. For instance, on pp. 287–288 we are told that "the more exact stage in the study of evolution was begun in the late nineteenth century when Hugo De Vries revived controlled experiments such as had been made some use of by Lamarck and Mendel. Considerable specific modification has been brought about under conditions admitting a good deal of precision." Undoubtedly the authors know to what experiments they are referring, and of what nature the modifications were; but when they ask, in the very next sentence, "How much does this evidence prove?" a careful student can only reply that he has not read any evidence, and a less astute soul will happily let the "evidence" prove that the amoeba tends toward God.

To systematize a field like philosophy is a Herculean task, and to perform it the authors would have had to be entirely free from such considerations as the demands of conventional teaching-programmes. But, after all, the book is written to meet just such demands, and conscientiously mentions every topic an introductory

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course might be expected to touch upon—symbolic logic, space-time, psycho-analysis, and what-not. For instance, on p. 220 the authors profess to make "a brief and vague attempt" to tell us about contemporary physics; what on earth is the use of a brief and vague attempt at expounding a subject essentially profound, systematic and exacting? None, but to satisfy a misguided educational ideal, a foolish demand. Furthermore, no other motive could account for the inclusion of one chapter on the symbolic notation for propositions and their inter-relations; for the cursory account here given is necessarily difficult and jumbled, and, what is most disconcerting, *symbolic logic is not needed for understanding the subsequent parts of the book.* On p. 150 the relation $a \equiv b$ is mentioned, but unfortunately in an erroneous way, since $a$ is said to precede $b$ in time, so that $a$ and $b$ can not be propositions—and only propositions can be mutually implied, or equivalent. The spirit of symbolic logic has not found its way into the book; else how could we possibly be told, on p. 212, that a proposition of physics was *necessarily true* "for a time"?

Only two notions derived from modern logic figure prominently in the book: they are the notions of the Universe of Discourse, and of Postulates. But they are not used in a way familiar to logicians. "Universe of Discourse" usually means a *context,* as in Chapter X, where the word "Universe" has been replaced by "Realm"—at least, we are not told that "Realm of Discourse" has a different meaning from "Universe of Discourse." Now, a logical Universe is not a realm of phenomena; it is a set of basic concepts. The fact that a set of concepts is applied to an arbitrarily limited realm of phenomena does not make this set constitute a Universe of Discourse; still less does it make the *phenomena* compose a logical Universe. This is an elementary and unpardonable confusion. A similar error occurs on p. 408, where we learn that "factual beliefs do not clash when they belong strictly to different realms of discourse." This is a popular argument, often heard from the pulpit by intellectual congregations, but it should no longer be a snare to philosophers and logicians. In a book of this sort it suggests too strongly that the authors, not wishing to antagonize anyone, are playing safe with accepted moralities and religions.

The literary style of the book should certainly appeal to the average student; for it employs his own language, and copies his fast-moving, unpedantic ways of thinking. On p. 78 we are told that "Justice is when you pay your debts," etc., in the most approved Freshman fashion; and (p. 43) that something or other "is seldom this clear cut"; and again, on p. 291, that "we have to go on, therefore, only dialectical elaboration" (where the sense, unfortunately,

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is apt to be obscured by the fact that we read "to go on" in its old accepted meaning before we realize that its slangy meaning is in order). Our authors' example of a subjective proposition is "Gosh, I feel tired," and of a proposition which, being false, implies anything you please, "If he's a musician I'll lay an egg." To write a serious and significant book of 462 pages in the Student's English is a stylistic accomplishment.

On the whole, the *Introduction to Philosophical Analysis*, despite many short-comings due to the extreme difficulty of its task, is a full and right-minded book; could the detailed elaboration of the work only have equalled in excellence the general conception, it would have been a pedagogical masterpiece.

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*Anthologie des Philosophes français Contemporains.* Preface by ARNAUD DANDIEU. Paris. Editions du Sagittaire. 1931. 533 pp.

This collection of contemporary French philosophical writings is bound to be compared to the volumes of personal statements by philosophers which have recently appeared in England, Germany, and America. There are obvious differences, of course, since this anthology is a gathering by editors of texts with biographical introductions, whereas the others consist of professions of faith especially prepared by the philosophers themselves. There is a more important difference, however, to one who is interested in securing a panoramic picture of the state of philosophizing in the different countries concerned. It lies in the principle which has guided the selection of contributors. In England and America the published series have had an official and academic character that would almost justify the title of Contemporary College Teachers of Philosophy. In France the thing has been managed otherwise, with the result that contemporary French philosophy as mirrored in the present volume has a scope far wider and a tone far livelier than that to which we are accustomed. More space is given to the younger thinkers, the non-conformists, the lone wolves, even the *anti-universitaires*.

The matter may perhaps be explained succinctly though imperfectly by the metaphor used in the book's preface by M. Arnaud Dandieu. French philosophers to-day, he says substantially, are either castle-dwellers, or outlaws of the countryside. The castle-dwellers are those who belong to one of the essentially feudal orders or schools: "*le thomisme, l'idéalisme sorbonnard, le freudisme, l'école sociologique, la psychologie behavioriste, le marxisme,*" with their entrenched fortifications, armaments, uniforms, passwords, and

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spies. M. Dandieu goes on to elaborate the conveniences supplied by these doctrinal citadels, which, like the castles of old, "contain within their walls whatever is needed to feed and to entertain their inhabitants." Each fortress possesses "its Revue, its poets, its novelists, and its salons, and it may even have its deputations overseas, *où quelque seigneur du fief a fait naguère souche d'un bâtard, par exemple de l'humanisme américain.*"

But outside the castles and their surrounding lands lies the wilderness where other sorts of philosophical combatants may be found. These are the "savages" or hermits of no man's land, who live alone or in small temporary groupings without stated domicile or provision for defense. They have no use for the false security of outmoded battlements, choosing to live dangerously in the open, and confining their activities to occasional raids upon scouting parties, or sapping and mining operations. Among these independents the editor cites MM. Meyerson, Pierre Janet, Lévy-Bruhl, Minkowski, and Jean Wahl, not to mention the more literary rebels. To include these men and the younger writers like Louis Rougier, Georges Politzer, and René Daumal, the editors have sacrificed the inclusion of well-known authors like Boutroux, Rauh, Lachelier, Renouvier, Lagneau, Leroy, Bouglé, Gilson, Chevalier, and Lalande. This is done on the theory, no doubt, that the most stimulating thinking of any period is likely to be found "in opposition," and that vested interests can be relied upon to look out for themselves. Some will probably grumble at the disproportionate outcome of the bargain which excludes so many great scholars and teachers, but there can be no denying that it has resulted in a book that is extraordinarily fresh and awake. Not all the famous names are missing by any means. Besides those already mentioned, the book contains well-chosen selections from Sorel, Henri Poincaré, Hamelin, Durkheim (for the editors include living influences whether or not the man is physically alive), Loisy, Goblot, Bergson, Blondel, Dumas, Maurras, Brunschvicg, Langevin, Baruzi, and Maritain. The introductory critical biographies by different hands are almost uniformly excellent, and the bibliographies useful. It would be instructive to stop and consider more fully the trends of French philosophizing at present as displayed in this collection; but one can only voice the pious hope that as living and dramatic an anthology of America's castellated and uncastellated philosophers may some day be compiled.

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*De Luther à Wagner. Essai de psychologie ethnique.* N. Klugmann et Dumesnil de Gramont. Préface de J. L. Breton. Paris: J. Vrin. 1931. 2 vols. 227 pp. and 222 pp.

The professed aim of this book is to contribute to international understanding by bringing about a better knowledge in France of the German character, which for the Latin spirit is difficult to grasp. To accomplish this task the authors have addressed themselves to Germany itself and have undertaken to study its great men on the supposition that a people's character is revealed by its men of genius. The list selected for this study is certainly comprehensive,—all fields are represented, religion, philosophy, literature, politics, history, art, and music. From Luther to Wagner German men of genius pass in review and their life and work are subjected to close and searching scrutiny. As a result there emerges the thesis that the salient characteristic of the German soul is its double nature. All great Germans have a *Doppelseele*. And what is more, they are conscious of it, glory in its possession, and unblushingly proclaim it.

As a matter of caution we are warned at the outset that every man is double, no one is perfectly consistent. Only with the Germans inconsistency and contradiction is so marked, so prominent, as to be characteristic. For every good quality there is in the same individual a bad quality, a noble impulse with a base one, with candor, duplicity, with tenderness, brutality, with dreamy vision, a stern sense of reality. The very essence of the German soul, as the authors see it, is contradiction. And the thesis is perfectly illustrated by a study of such men as Luther, Frederick the Great, the Romanticists, and Wagner. Luther protesting against pope or emperor interfering with liberty of conscience and then calling upon princes to permit none but the true, i.e., Lutheran worship, proclaiming the liberty of the Christian and denouncing in terms of unmeasured fury the rebellious peasants who have risen in the name of that liberty, furnishes a good illustration of a double soul. So does Frederick the Great when he writes against the principles of Macchiavelli and then calmly proceeds to put these very principles into practice. And Friedrich Schlegel oscillating between libertinism and asceticism, between atheism and orthodoxy, and finally embracing the doctrines of the Catholic Church, is a typically wavering romantic character. And Beethoven is all devotion to the mighty of the day while he puts forth revolutionary and democratic pronouncements. And Wagner is a bundle of contradictions. His music-dramas breathe the Spirit of renunciation and self-sacrifice while in life he craves luxury and practices self-indulgence, even if he must borrow on all sides from friends and patrons, and weans away from his friends the affection of their wives and daughters.

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So the hybridity of the German character is a fact, and it has persisted from the days of Tacitus to the present.

Supposing the thesis proved, we ask what is its bearing on the present time and generation? And here the study has its practical side. The German enigma is a source of alarm to the French, its solution has baffled, and still continues to baffle them, so we are told. And when historical and political problems are touched on in this book, strict objectivity is at an end. The point of view becomes frankly French. The study of Bismarck involves assumptions that are debatable. He is represented as having forced a war upon an innocent and unsuspecting France and his methods were those of deceit and dissimulation. No doubt, Bismarck was not over-scrupulous with his adversaries. But were they more scrupulous,—was any statesman of the time, or for that matter of very recent times, scrupulous in regard to truth? Bismarck coveted the war, not because he liked war, but because there was no other way of achieving his one great goal, German unification under the leadership of Prussia. France made no secret of her opposition to such a plan. It was in her interest to prevent its success,—it was Prussia's interest to carry it through. And the cry of "revenge for Sadowa" and the demands for compensations in the way of annexation of neutral or German territory made it quite plain to Bismarck what opposition he might expect and the only way to overcome it. To be callous to sufferings caused by armed conflict is not a peculiarity confined to German statesmanship. Richelieu had no scruples when it came to the aggrandizement of France. He crushed Protestantism at home, but supported it abroad, even if the horrors of the Thirty Years' War had to be prolonged for fourteen years. In his case, as in Bismarck's, all apparent inconsistency vanishes when viewed against the background of a higher unity—some great purpose to be achieved. And Bismarck was no hypocrite; he did not drag into the conflict nor into the peace-treaties moral issues as was done at Versailles in 1919, with what woeful results the world today fully realizes.

After all, the double soul can be overstressed, and the unity in the character of the men studied can thus be obscured or forgotten. That the German character is complex is undoubted; sentiment plays a large rôle in determining action with the German people. But is not that the case elsewhere too? Even in France things do not always proceed by inexorable logic. Wagner may be thoroughly inconsistent in many ways, but when it comes to his art he presents a splendid example of singleness of purpose. He never compromised his ideals for pecuniary gain or worldly honor. It is not just to argue (as is done in Vol. II, p. 163) that he was ready to profit from the *liaison* of his niece Johanna with a Prussian prince to get his

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*Tannhäuser* performed in Berlin. The letter cited has a note of bitter irony (see Kapp, *Wagner und die Frauen*, p. 117) which authors fail to appreciate. Besides, the facts in this particular case are well known. Wagner could have had his *Tannhäuser* performed in Berlin, if he had acceded to the requests of the management. But fearing a bad performance, he stipulated that Liszt must supervise and that was met with refusal. He finally had to surrender, but only dire need drove him to it (see the Liszt-Wagner correspondence of 1854). And did he not later oppose his royal friend, the King of Bavaria, in the matter of single performances of the Ring? And after all why did the Paris performance of *Tannhäuser* fail? Surely it will not do to minimize the personal element, the rancorous opposition of the Jockey-club on account of Wagner's refusal to insert the customary ballet, and to attribute the fiasco to the inability of the French public to understand the German double soul in *Tannhäuser*. Nor will such an explanation explain the conduct of the insanely jealous Berlioz. The account of this affair given by Kapp in his well-known little book *Das Dreigestirn* (pp. 85–107) is absolutely convincing. And the attempt to minimize the influence of Mathilde Wesendonck on the genesis of *Tristan and Isolde* is not particularly successful. That famous letter to Liszt in which Wagner announces his plan of writing his great love-drama contains a passage asserting he had never known the happiness of real love, and therefore he wished to erect a monument to this fairest of dreams. The authors evidently think this implies he was not yet in love with Mathilde when he wrote these words and therefore *Tristan* could not have been inspired by her. But reference is plainly to Wagner's experiences with his wife Minna. To be sure, the climax of the passion came some years later, but the master had met Mathilde two years earlier, and from the very beginning he had shown more than ordinary interest in his friend and muse. Letters to Liszt from the years 1853 touching on his unhappy marriage speak a plain language.

But these criticisms affect only certain points. On the whole the book shows sound learning and makes interesting reading. Whether its thesis can be turned to important use in the present international situation is not at all certain. That the German enigma troubles the peace of mind of the French people may be true enough. But that the enigma is equally troublesome to the rest of the world may be doubted. If the German Sphinx has recently proposed its riddle more cruelly than ever to an uneasy France (as we are told, Vol. I, p. 17), it is for reasons that most historians have no trouble to explain. In the preface (p. 8) it is stated that an international tribunal, if its decisions are not to leave behind resentments leading to new wars, should act less as judge and more as arbiter; only thus a durable and

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loyal entente between peoples can be established. Precisely—and because the statesmen who made the Treaty of Versailles acted in any other spirit except that of such a tribunal the world is today confronted by so many enigmas.

"Or, pour s'entendre, il faut se connaître." Anything that will make for better mutual understanding of the French and German peoples is certainly to be welcomed. And this book, brilliantly and interestingly written, deserves the attention of all students of international affairs.

ARTHUR F. J. REMY.

COLUMBIA UNIVERSITY.

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## JOURNALS AND NEW BOOKS

RIVISTA DI FILOSOFIA. Anno XXIII, N. 3. Discutendo il problema dei caratteri differenziali tra filosofia antica e moderna: *R. Mondolfo.* Heinrich Rickert: *F. Federici.* Di alcune relazioni fra conoscenza e volontà: *E. Colorni.*

SCIENTIA. Vol. LII, N. CCXLIII–7. Probabilités géométriques. *R. Deltheil.* The Age of the Stars: *L. Silberstein.* La regolazione neuro-umorale della circolazione del sangue: *C. Foà.* Staatssozialismus in China im Altertum und Mittelalter: *O. Franke.*

Abbott, J.: The Keys of Power. A Study of Indian Ritual and Beliefs. New York: E. P. Dutton & Co., Inc. 1932. xi + 560 pp. $6.00.

PHILOSOPHICAL QUARTERLY. Indian Institute of Philosophy and Indian Philosophical Congress. Vol. VII, No. 1. Presidential Address: *G. H. Langley.* The Ego-Centric Paradox: *A. C. Mukerji.* The Spirit of Indian Philosophy: *S. K. Das.* Sanatan Dharma or The Moral Life as Conformity to Law: *N. Venkataraman.* Fact and Fiction: *P. B. Adhikari.* Schopenhauer as a Forerunner of Pragmatism: *Mir Valiuddin.* What is Relation? *G. H. Roy.* Are Difference and Identity Relations? *T. R. V. Murti.*

REVUE D'HISTOIRE DE LA PHILOSOPHIE. 5e Année, Fasc. 3–4. Contraires et catégories dans la philosophie hellénique: *Raymond Lenoir.* Le Cogito activité irréductible du sujet: *Roger Lefèvre.* Le Centenaire de Hegel: *Raymond Lenoir.* Le problème du devenir des concepts dans la philosophie contemporaine: *René Hubert.*

Sérouya, Henri: Le Problème philosophique de la Guerre et de la Paix. Paris: Marcel Rivière. 1932. 204 pp. 30 fr.

Swann, Nancy Lee: Pan Chao. The Foremost Woman Scholar of China. First Century A.D. Background, Ancestry, Life, and Writings of the Most Celebrated Chinese Woman of Letters. (Published for the American Historical Association.) New York: Century Co. 1932. Limited edition. xix + 179 pp. $6.00.

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## NOTES AND NEWS

The American Academy of Political and Social Science offers for 1933 two research fellowships in the Social Sciences: (1) The Simon N. Patten Fellowship carrying a stipend of $1,000, and (2) The James-Rowe Fellowship carrying a stipend of $2,000.

These fellowships will be assigned to the two applicants who submit what appears to the officers of the Academy to be the most worthwhile research projects in the field of the social sciences. The amount of the stipends will obviously place certain limitations on the type of project submitted, but on the other hand, the officers will not be averse to consider these fellowships as grants-in-aid which may enable the candidate to complete a good project already begun. As to problems of investigation, those candidates will be given preference who submit research projects which intimately bear upon the economic and social questions which in the light of present conditions urgently require solution.

Candidates for those fellowships must possess the degree of Ph.D. or its equivalent. If the qualifications of the candidate are exceptional, this formal requirement may be waived.

The Academy reserves the right to publish the results of the researches carried on by the aid of these fellowships. The manuscripts embodying the results of the researches in question must be submitted in the English language on or before July 1, 1934.

Applications for fellowships must be made on special forms supplied by the Academy on request. These applications must reach the Committee in charge on or before November 1, 1932.

Appointments to fellowships will be announced as soon as possible after December 15, 1932, and in the January, 1933, issue of the *Annals of the American Academy of Political and Social Science.* Address all communications to Chairman, Fellowship Committee, American Academy of Political and Social Science, 3457 Walnut Street, Philadelphia, Pa.

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THE JOURNAL OF PHILOSOPHY

# THE NATURE OF COMMUNICATION

THE communication of facts is the most important of social activities. The instrumental and intrinsic value of successful communication makes its nature a fit object for critical investigation. What follows is an attempt to understand this nature and to make clear its powers and presuppositions.

## I

We may begin by asking what it is that we communicate. This question is given a tentative unanalyzed answer in the opening sentence. We communicate facts, states of affairs, e.g., that roses are red. We thus express what is the case, a situation. To say that such and such is the case is to say that entities of a certain kind stand in certain relations to entities of other kinds. In this analysis we speak of entities and kinds of entities; man is a certain kind of entity, a man is a specific one of this kind. Red is a kind of color, this red is a specific instance of the kind. In our experience we recognize this distinction by saying that "*this* is a *that*," that "this is a rose," or "this is red." We may introduce the term "content" to stand for what is meant by "*this*," the term "form" to indicate what is meant by "*that*." Thus the term "content" refers to the given in experience, "form" to that as which it is given. The examples referred to are misleading in so far as they suggest that "this" always refers to a thing; "this" may stand for a quality or a fact, or a relation, if we distinguish between fact, quality, thing, and relation. "This is a sour," or "this is a book on a table" or "this is a between"—all these assertions serve to indicate the distinction between form and content. The distinction is essentially that between a class and one of its members. By "this" we mean a member of a class; by "that" or the descriptive phrase or name we mean the class of which this is a member.

It is necessary to be on our guard here for fear of concluding that by form is meant a universal, a character common to several contents. We do not hold that form is the name for a character common to several particulars. Humanity, redness, betweenness;



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these are not the same characters found in all things called man, red, between. Things called by the same name *need* have no properties in common; this must be obvious from the very origin of words, their attachment to objects is perfectly arbitrary, so that we can class the most diverse objects together. Since, however, it is *convenient* to give the same name to similar entities we find that in general this is the case; but this is not sufficient reason for concluding that sameness of name implies sameness of character. We may admit the customary identity of name, of similar objects, without admitting the existence of universals in the objects so named. If we take the case of colors we see that this is possible; what is common to green and red is not something neither green nor red, but still color; for there is no color in addition to all specific colors.[1] What is common to colors is the name, and this is not a property of the colors so named; if we wish to know why they have a common name this is not to be discovered by examining first one color and then another, but by comparing two or more colors and discovering that they are comparable, order themselves in a range or class. There is no logical necessity for holding that similarity or comparability implies something with respect to which there is similarity or comparability. Two colors may be similar or comparable simply and irreducibly. From the point of view of logic this is possible, and experientially it seems adequate.

We are able in this manner to consider the form to be not something common to many contents, as a character immanent in them, but rather a set or class of similar entities. Thus when we say "this is a color" we mean that "this is a member of the set or class of things called colors"; when we say that "this is red" we mean that "this is a member of the class of similar contents called by that name." So too with relations, which are given, that is, constitute content, in experience, in the same sense as colors or odors are given. When we say "this is an instance of the relation *between*" we mean that it is one of a set of *similar* relations, no two of which need be identical, i.e., exhibit an identical element. The several instances of *between* may and generally do differ with respect to specific characters. What each has in common with the other is a name, bestowed not in virtue of a common character in each, but because of a certain similarity among them.

In the case of things, such as physical bodies, the treatment may be the same. "*Man*" means an object of certain defined properties.[2]

[1] Cf. Prof. D. W. Prall's essay on "Abstract Ideas," *Univ. of Calif. Pub. in Phil.*, 1926, Vol. 8.

[2] By "property" I mean a Johnsonian determinable (cf. *Logic*—W. E. Johnson, Vol. 1). Thus color is a property, this specific color is a quality or

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When this name is applied to an object it merely means that this object has certain assigned properties; two objects both having this assigned set of properties may differ with respect to every specific character. It is in virtue of a common form, that is, a set of properties, that distinct individuals are given the same name, and this common form means merely membership in a class of similar entities.[3]

## II

This distinction between form and content plays an important rôle in the analysis of communication. We must now clarify the relation of words to the elements so distinguished. A word, we saw, was a name of a set of similar contents; not in the sense that the set is anything above the members constituting it, but in the sense that the word names any and all members of the set. For example, "*red*" is the name of each of the members of a set of shades falling within certain defined limits; "*between*" is the name of each member of a set of relations all falling within a certain range, the range defined by the possibility of comparison between the entities making up the range.[4] "*Man*" is the name of each member of a certain set of occurrent conjunctions of characters, each member falling within certain defined limits, and so on.

Most, if not all, words are general names in the sense just indicated, as naming each of the several members of a set. It is doubtful that any words have a completely unambiguous connotation, so that there is no specific qualitative difference among the several individuals so named, if this means that no difference is discoverable after narrower and narrower scrutiny point for point. And there are theoretical grounds (based upon the assumed continuity of the several determinables, to use Johnson's term, of space, time, shape,

character. A property is not *something;* we can not ask what it is; we can only say that "to say a thing has certain properties is to say that it is characterized by certain determinates." The determinable is nothing above or in addition to the determinates that constitute it. To be a determinate under a determinable is to be a member of a class of comparable entities, and this is all.

[3] I do not wish to deny that there is a sense in which two individuals, two contents, may exhibit sameness of character and not mere similarity (which implies qualitative as well as spatio-temporal difference). What I do wish to deny is that, when qualitative *difference* is recognized, it is necessary to assert the presence of an element of identity.

[4] In discussing the relation "between" I of course mean only spatial betweenness—other kinds are excluded, and I believe ought to have different names. The manner of ordering "betweens" is not clear to me, and it may be impossible to do so at all. If this is so it will only mean what is obvious, that there need be no *internal* principle of order connecting the members of a set. That is, I can class *anythings* together, though certain classifications will be quite useless.

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color, odor, sound, etc.) for rejecting the proposition that such complete lack of ambiguous connotation is possible.

This being so, words fail to indicate unambiguously not only that to which they refer, but what its *exact* characters are. *What words are able to do is to indicate the form of the things they stand for, and this means that they convey the information that the entity referred to is a member of a class of similar entities.*[5]

Thus, for example, when I say "a book is on the table" I say that one of a certain class of things (the class having certain widely defined limits), each member of which class is called "*book*," is related in one of a certain set of ways, of things being related, called "*on*," to a member of a set of similar-entities called "*table*." Were I to specify more closely I should say " a blue book is on the square table"; the phrase "*blue book*" serves to narrow the range of possible objects answering the description, that is, belonging to the class indicated, and the added qualification of the class table does the same; but within even these more limited classes the possible values satisfying the descriptions are unlimited, not only in number, i.e., with respect to individuality, but with respect to specific characters.

If on the basis of this analysis we again ask the question, "What is it that we communicate?" we see that the answer is not "facts," but rather "The form of facts." A fact, something that is the case, is, as far as our experience is concerned, given as content. We perceive books on tables—and such perception is absolutely determinate. What we perceive we do perceive, and nothing else. When, however, we try to report what it is that we perceive, i.e., what the content of our experience is, this absolute specificity is lost. Our intentions may be of the best; we may speak with the aim of communicating exactly what we find in our experience, but we simply can not do so because we have no words for the unique, the absolutely specific. What we say is not false, but neither is it specific. We are able to say that such and such is the case, and it is (or may be) true that such and such is the case; but what absolutely specific situation is the case is not contained in the assertion that such and such is the case; for many different situations are described by this assertion. We are able then to say only that a fact of a certain form is the case; but to say that a fact is of a certain form is not to say exactly which situation of those constituting this form, the fact is.

And since we express ourselves in words, those who receive communications receive at best what these communications express, form and not content. The recipients of a communication may, we suppose, imaginatively fill in the form expressed by the words, and may

[5] Or, of course, if we wish to give the same name to dissimilar entities, this is also *possible*, though far from helpful.

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understand that something specific of the form indicated is intended; but what this is, the expression or assertion does not say. And, therefore, even though the character of the imaginative filling of the form be identical with the character of the content whose form is expressed, we may not say that this identical character was *expressed.* Nor have we any direct evidence to suppose that the sender and receiver of a communication ever do have an identity or sameness of character or content. For, it is impossible to verify a proposition concerning the content of another's experience directly, the only way, of course, in which such a proposition could be verified.

## III

Thus it doesn't seem necessary to suppose that *identity of content* is required for communication, for it would apparently take place well enough without it.[6] But it may be well to listen to the sceptical logician's objections, for he will argue that, quite apart from whether in actuality common content in two experiences is required, or verifiable, for successful communication, it is self-contradictory to hold that form is communicable if content is incommunicable.

We were at great pains to renounce the doctrine that form was something over or above sets of content. Form, we argued, is constituted by content. We held that the form of *red* was the set of similar *reds;* and that each red had the same form in the sense that it belonged to a set of similar shades. To say that $r_1$, $r_2$, $r_3$, have the form $R$ is to say that $r_1$, $r_2$, $r_3$ each belong to the class $R$, constituted by $r_1, r_2, r_3 \ldots r_n$.[7]

Now if form is constituted by content, how is it possible to communicate form unless somehow content is communicated? Let it be agreed that "$x$" is the name for $a_1, a_2, a_3 \ldots a_n$ and that when "$x$" is used in an assertion we understand by its use that one of the members of the class $a_1, a_2, a_3 \ldots a_n$ is referred to; and that it is the expression of this information that we call communication of form. Unless, however, sometime the users of the word or name "$x$" have agreed that it is to mean $a_1, a_2, a_3 \ldots a_n$, i.e., certain contents, it would be impossible to communicate the form; even though after such agreement had been arrived at, communication of form could take place without communication of content.

This suggestion that identity of content is necessary, sometime or other, if two persons are to communicate with each other, we shall

[6] The arguments in defense of this position are well stated in C. I. Lewis's *Mind and the World Order,* Chapter IV.

[7] It is, strictly speaking, wrong to say that the form *is* the set of contents constituting it. The form *is* nothing. We say that $r$ has the form $R$ if $r$ is a member of the set, each member of which is given the name $R$.

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now investigate. The problem as to whether, once the meaning, or rather meanings, of a word are determined, common-content is necessary for communication, we may answer in the negative, for the reasons given.

Before we discuss whether communication presupposes common-content between two or several persons' experience, sometime if not at the moment of communication, we must ask what it is that we wish to investigate. We shall be told that we wish to investigate whether common-content is presupposed by communication. And what does this mean? What is meant by common-content? The answer seems very simple. Two experiences are common with respect to content when the same quality or qualities confront both. And if we ask wherein this sameness consists, the likely answer will be: "If you do not already know, I can't explain it; I at least know what I mean by sameness of character among different elements of *my own* experience and this relation I have in mind when I say that two or more persons experience the same character. Ultimately meaning reduces to such confrontation, and no more can be said or done."

Now this is true. But there is still some difficulty. I admit and believe that I know what I mean by saying that two elements in *my* experience are the same with respect to certain characters. The question now is, Is this a meaning that can be applied to the matter in question? In other words, does "sameness" have the same meaning in the two cases, first: when referring to two elements in a single experience; second: when referring to two elements in two different experiences?

The answers seem to be, "Of course. Why not?" The reason that there is some doubt as to the validity of this extension of relevance lies in the possibility that so extended it loses its meaning. If it means anything to say that two elements in different experiences are the same, it is necessary not merely to say that such sameness is the same sameness predicated of two elements in one experience, but to say actually *what would be the way of verifying whether the two elements in different experiences were or were not the same.* It is this that is difficult and this difficulty lies at the root of the reluctance to admit that such extension of the word "sameness" is valid.

He who asserts that he understands a proposition must be able to say what it means, not merely by repeating some words, but by giving instructions as to the manner of verifying the truth or falsity of the proposition. Accepting this criterion of meaning I wish to ask again what would be the case, how could the truth of the proposi-

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tion be verified, if two elements in two different experiences or minds were the same?[8]

If we suppose we know what this means, from knowing a sameness among the elements of our own experience, and assert that this is what is meant, we must say that the way to verify a proposition asserting such identity is to look into both minds or experiences in question and see whether that relation called "sameness of content" holds.

Now, unfortunately, such prying into another's mind is not only practically impossible, but theoretically impossible. Any observer is necessarily limited to his own experience. If he succeeded in gazing into the minds of two other beings and comparing the contents of their experience he would and could only report his own experiences. He might report sameness of content; but it is sameness in *his* experience that he would report. The introduction of a superhuman intelligence fails to help the situation. For it is not merely a matter of human weakness that makes such observation impossible, but it is logical impossibility. What would be necessary for success in such an investigation would be for a mind or self to become another; for it, in short, to be not itself. That this is an absurdity is obvious.

When we assert that "*A* is not not-*A*" we do not assert a true proposition; we simply do not say anything at all. For to deny a senseless proposition isn't to deny anything; and "*A* is not-*A*" is nonsense; and it is such nonsense that we are driven to where we contemplate the possibility of one mind or experience merging with another. The result of this is not to say that it is false that two persons ever have the same content; it is, properly speaking, to say nothing whatever about the subject; for nothing can be said about a *senseless* subject (since we can not know what we are talking about).

If this is so, then we can not ask the question, Does communication involve sameness of elements in the experience of those involved, either always or sometimes? And our speculations concerning the necessity of the supposition that ultimately, if form is expressible, content must be had in common, turn out to be without meaning. And if the grounds for this opinion are understood, the further question, whether some universal, transcending particular contents, is necessary for communication, is also seen to be no question at all. For, supposing us to know what we mean by such a universal, it is clear that the question whether meaning is conveyed by it, whether

[8] I owe this doctrine of meaning in its present form to Professor Moritz Schlick. It appears to be the central point about which the modern empiricism revolves. (Cf. L. Wittgenstein's *Tractatus Logico-Philosophicus,* prop. 4.024.)

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communication demands that the persons involved conceive the same universal, differs in no essential way from the one just answered concerning common-content.

IV

But it will be objected at once that such a conclusion makes communication impossible, for, as the very word implies, there must be something had in common if communication occurs. Something is obviously wrong if an analysis, instead of explaining how an event occurs, denies that it does occur.

Now it is obvious that communication does occur. Does it follow that our analysis is mistaken. This analysis results in the conclusion that arguments resting upon the supposed necessity of common-content for communication are meaningless, not in the conclusion that they are false. For we can not discuss the question whether common-content is or is not *necessary,* if we do not understand the phrase, common-content. It can be no objection to an account of communication if it consciously avoids the introduction of meaningless phrases.

Our task now is to show that communication is possible and can be clearly understood, even without resting upon nonsense. The way to show this is simply to go to experience. If we discover what is the case when we say that communication has occurred we will understand what communication is.

Communication occurs when following *certain* acts of one person, another responds in *certain* ways. If I speak, I say I am understood when he to whom I speak answers that he understands, or acts in the proper way to act in the particular predicament he finds himself in; or acts in an improper (i.e., unexpected) way, and in one way or another explains his strange actions. These are, of course, merely typical. The variety of proper and improper responses to assertions, communications, is indefinite; we may *possibly*[9] never be absolutely certain that we are understood. But there are certain types of actions such as speech or more obviously fitting or unfitting bodily responses that serve to indicate whether it is or is not likely that a speaker has been understood or misunderstood; and on the basis of these we judge of success or failure in communication. The complete description of the way of verifying successful communication may be difficult to attain (this depends upon the *definition* of successful communication) yet this does not alter the principle here involved; namely, that all verification of successful or unsuccessful

[9] Strictly speaking, there is no endless verification of a proposition, for to say what we mean by verification means to say what events verify the proposition; and if these were infinite in number we could never say so, that is, enumerate them; and we would therefore have no definition of verification.

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communication is in terms of behavior of the recipient of the communication. The type of behavior is irrelevant; but it must always remain within the field of possible observation, and by *possible* observation I mean that which involves no contradiction. This is simply another way of saying that it is impossible to enter into the mind or experience of another creature; logically impossible, as has been explained. Concerning the facts or occurrences of another's experience we not only can know nothing, but actually can not conceive them. For to conceive them would be to imagine a state of affairs in which we would experience those facts, i.e., a state of affairs in which we should cease to be ourselves.

Against such a view (essentially behavioristic as may be seen), it will be objected that it is not obligatory. The meaning of words, including the word "communication," is arbitrary; and anyone is justified in using it as he pleases. Thus we meet an objector who refuses to use this word where consciousness[10] is not involved. Argues this philosopher: "In my own case, when I say I have understood something, 'consciousness' is always present; and since I can not imagine anything being communicated to me unless I am 'conscious' I refuse to grant that anything has been communicated to others unless they too are 'conscious.'" Thus, though no possible way were known to verify the fact of another's "consciousness," this would remain as a necessary element in communication.

At first glance such an objection seems justified. Obviously each of us (that is, I), argues in some such fashion. We do recognize our own "consciousness"—and distinguish it from mere behavior. We know that we are able to understand without disclosing the fact; and able to respond appropriately without understanding; so that the mere fact that another responds does not prove that he understands, nor does absence of response prove that he fails to understand. Since in my (or our) own case "consciousness" is involved in understanding it must be considered the essence of successful communication.

Now we must inquire whether the fact, that "consciousness" and not response is the essence of understanding when we are recipient of a communication, gives grounds for holding that "consciousness" and not response is the essence of understanding when another receives a communication. That is, we have to ask whether understanding means the same in the two cases (1) when something is communicated to me and (2) when I communicate to someone else. For, if by "my own understanding" I mean one thing, and by

[10] By consciousness here I mean certain peculiar *feelings of understanding*, certain feelings of avenues of action appropriate to the situation expressed by the proposition.

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"another's understanding" I mean another thing, the fact that in the one case "consciousness" is demanded will furnish no grounds for insisting upon its presence in the second case; what is true of one kind of happening need not be true of another.

Now it is clear that to have something communicated to oneself is not the same as communicating something to another. In the one case a *received* stimulus of a certain kind or kinds is followed by what is called "conscious understanding"; in the other a stimulus, *given* not received, is followed by observed responses of certain kinds. In the first case "consciousness" may or may not be accompanied by overt action; in the second, such observed behavior is all we ever experience; and if our argument is sound it is meaningless to even consider the possibility that "consciousness" accompanies it—in any case it is quite irrelevant.[11]

Since it is clear that the "subject" and "object" in communication (subject refers to "me," object to "someone in my world") involve "understanding" in the two different ways indicated, there is no reason why we should demand the same properties of them. Understanding in the one case simply means one thing, and in the other case means another. Therefore, even though we demand "consciousness" (and rightly) for our own understanding we need not, and in fact can not, demand it of others (since this means the imputation of consciousness to them, something that is not simply invalid, but meaningless).

If this argument is valid the whole question, whether communication involves something common, is seen to lose its point. We can analyze communication without touching this at all. And therefore the argument that lack of it (something common) makes communication impossible is simply false (even if not senseless).

## V

If this account should be accepted there remains a final point to make clear. Since the analysis of communication finally results in a denial that there is any sense in discussing whether something is had in common when communication occurs, it is fair to question in what sense it still remains true that form and not content is com-

[11] The speculation as to whether the animals and men in my world are automata is an idle, senseless one in so far as it is speculation, i.e., consideration of an unverifiable "proposition." If they all act, always, as if they were not automata, if in morphology and behavior they answer the description of men and animals, they simply *are* men and animals, and not automata. The way to discover whether they are automata is to observe their behavior and dissect their bodies to discover wheels and levers; or nerves and organs; it is not to endeavor, vainly, to peer into their "minds," or entertain the senseless "proposition" that they do or do not *think* and *experience* as we (i.e., I) do.

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municable. It would seem that since actually no question of sameness of content or form is involved there is just as much or just as little sense in saying that content is communicated as that form is; that, in fact, both of these are in the same boat.

The reason why this distinction still may be maintained is to be found by a return to the original analysis of the nature of words. What remains valid in that analysis after this discussion is the proposition that the terms of our discourse are general in the sense indicated, as standing for each of the several members of a set of more or less similar entities.

Now, since we say we have expressed a fact, communicated a proposition, when following certain stimuli, the recipient of them reacts in appropriate ways, we are justified in holding that the form has been communicated, for the reason that the words which constitute the stimulus stand for this form. We are able to assert what in general is the case—and this assertion evokes the response; the response thus is to the assertion of something general, i.e., the form; thus the form is communicated or expressed.

If the whole analysis of words here given were wrong; and we had words standing unambiguously for a single content, we should be justified in holding that content could be expressed; but the sense in which this could be, it must be evident, is very different indeed from the sense in which at the beginning it was said not to be possible.

## VI

This inquiry may be summarized as follows:

1. We distinguish between form and content, content being that which is indicated by "this," form being that as which "this" is recognized—the type. Where we say that "this is of that form" we mean "this is a member of a set of entities falling within certain defined limits," the limits *generally* being defined by the similarity of the members of the set.

2. Words, the elements of language, are able to express form alone; they convey the *type,* not the *specific* character or content.

3. The difficulty involved in understanding how form can be communicated unless content is sometimes common to two experiences is met by an analysis of the notion of common-content which shows it to be meaningless. We are therefore not required to entertain objections to our theory which claim that it presupposes common content.

4. The essence of communication is then discovered to differ as we consider, first, communication to another; and second, communication to oneself. In the first case the introspectionists' insistence

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upon consciousness is disallowed, behaviorism being the only possible, i.e., sensible, doctrine; in the second, behaviorism is shown to be untenable, and the introspectionist doctrine is maintained.

5. Even though communication is shown to involve no common content, or form, it may still be maintained that form and not content is communicable; the reason being based upon the generality of words and the nature of the stimulus-response situation.

## VII

Finally a word of caution regarding what is and what is not maintained. It is *not* asserted that nothing is common to two experiences, nor is it asserted that I alone of all men and animals am conscious. It is asserted that such propositions are meaningless; that to deny or assert them is to deny or assert something senseless, which is, of course, not to deny or assert anything (for only sensible propositions are true or false; senseless propositions aren't propositions at all). The grounds for holding such "propositions" to be senseless are to be found in the empirical theory of meaning, according to which a proposition has meaning if it is possible to describe the state of affairs which would make it true, and the situations that would falsify it. Since, according to the analysis, propositions concerning sameness or similarity of content in two experiences and those affirming or denying something of another's consciousness, fail to pass this test they are rejected as senseless and able to contribute nothing but confusion to a serious discussion.

The doctrine here maintained concerning the nature of communication is merely a description of what *is* involved in communication; those who imagine that more *ought* to be involved than is discoverable must say what more this is; if I have anticipated them rightly this more is nothing that makes sense; and it therefore may and must be neglected and rejected.

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# A NOTE ON COMPOUND PROPOSITIONS

1. THE theory of compound propositions, i.e., such as have two or more propositional members (conjunctives, disjunctives, alternatives, hypotheticals), is rarely expounded with anything approaching systematic completeness. Nevertheless, the theory in question presents in some of its aspects a beautiful symmetry of logical relations, in the light of which the true import of this group of propositions, so important for the understanding of inference, may be rendered more clearly evident than the usual fragmentary,

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casual treatment permits. The present note seeks to exhibit, as a part of this theory, a certain system of compound propositions with two members, excluding those with more than two; and for reasons which will appear, excluding also certain two-member propositions with special features. The immanent logical relations of equivalence and contradiction which arise from a consideration of the truth-values expressed or implied in these propositions, will be demonstrated from a somewhat novel point of view; and in addition, certain related problems of general logic will be discussed.

2. Given any two elementary propositions, $p$ and $q$, and posing the problem of determining their truth-values, four possibilities present themselves. Taken together, these possibilities exhaust the alternatives, and each of them is exclusive of all the rest. The principles underlying this (compare the schedule in Table I) are two: every proposition is either true or false, and no proposition is both

TABLE I

| | | | |
|---|---|---|---|
| *A.* | $p$ true | $q$ true | $p.q$ |
| *B.* | $p$ false | $q$ false | $p'.q'$ |
| *C.* | $p$ true | $q$ false | $p.q'$ |
| *D.* | $p$ false | $q$ true | $p.'q$ |

TABLE II

| | |
|---|---|
| *A.* Both $p$ and $q$<br>Neither $p'$ nor $q'$<br>Not if $p$ then $q'$ | *A'.* Not both $p$ and $q$<br>Either $p'$ or $q'$<br>If $p$ then $q'$ |
| *B.* Both $p'$ and $q'$<br>Neither $p$ nor $q$<br>Not if $p'$ then $q$ | *B'.* Not both $p'$ and $q'$<br>Either $p$ or $q$<br>If $p'$ then $q$ |
| *C.* Both $p$ and $q'$<br>Neither $p'$ nor $q$<br>Not if $p$ then $q$ | *C'.* Not both $p$ and $q'$<br>Either $p'$ or $q$<br>If $p$ then $q$ |
| *D.* Both $p'$ and $q$<br>Neither $p$ nor $q'$<br>Not if $p'$ then $q'$ | *D'.* Not both $p'$ and $q$<br>Either $p$ or $q'$<br>If $p'$ then $q'$ |

true and false—the laws of excluded middle and contradiction respectively. The four basic truth-value combinations *A, B, C, D,* therefore constitute a logical framework of possible "facts," to which every proposition whose content yields some absolute or conditional determination of the truth-values of $p$ and $q$ must necessarily refer.

3. Each of the combinations *A, B, C,* or *D,* may be asserted; and if asserted, may also be denied.[1] An affirmative assertion of any one of them gives a *conjunctive* proposition, idiomatically of the form

[1] The objective correlate of the difference between affirmation and denial is the difference between the existence and the non-existence of the "state of affairs" (not necessarily factual) presented in the propositional content affirmed or denied.

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"both-and"; a denial yields a *disjunctive* proposition, of the form "not both-and."[2] These two, the conjunctive and the corresponding disjunctive, are thus mutually contradictory. Since the alternatives *A, B, C, D,* are exclusive, it follows that the affirmation of one is equivalent to the denial of the other three, severally and collectively; this gives rise to certain propositional equivalents. For the same reason it follows that the denial of any one is tantamount to the affirmation of the other three as uneliminated alternatives. This could be expressed directly in a proposition of the form, "either *B* or *C* or *D*," and this form could carry an exclusive interpretation. But such a proposition is not an element of the system here being propounded, if for no other reason than that it contains more than two propositional elements. On the other hand, *alternative* propositions of the form "either-or," and *hypothetical* propositions of the form "if-then," have precisely the logical significance required, in so far as their propositional members are $p$ or $p'$, $q$ or $q'$. These two types have a common trait, in that each two-member proposition of either type is compatible with three of the basic combinations *A, B, C, D,* while excluding the fourth. Every disjunctive proposition, therefore, has an equivalent in a corresponding hypothetical proposition; and another equivalent in a corresponding alternative proposition. To complete our system, we have only to reflect that the denial of any proposition compatible with three of our alternatives and exclusive of the fourth, must necessarily have the force of asserting the fourth and denying the other three. The denial of an alternative proposition yields a *conjoint denial,* idiomatically of the form "neither-nor," while the denial of a hypothetical is the denial of a hypothetical, there being no special idiomatic form and no special descriptive term. These last two forms are thus mutually equivalent, the propositional elements being suitably chosen; and both are equivalent to the corresponding conjunctive proposition.

4. The relations described above are exhibited in Table II, which presents a system of 24 compound propositions in their mutual equivalences and oppositions. Each of the four sets consists of two triads, *A* and *A'*, *B* and *B'*, *C* and *C'*, *D* and *D'*. Each member of the one triad is the contradictory of each member of the corresponding triad. Each member of an "affirmative" or *categorical* triad (affirmative in the sense explained above) contradicts each member of the other three "affirmative" triads, as a consequence of the fact that the four basic alternatives are mutually exclusive. But it requires the conjoint assertion of three "negative" or *conditional* triads, each capable

[2] I avail myself of the recent improvement in logical terminology with respect to disjunctive and alternative propositions. I do not, however, call hypothetical propositions *implicative,* for reasons which will appear.

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of being represented by any one of its members, to contradict or eliminate the fourth.

5. By a change in the order of the propositional elements a new proposition is constituted for each of the 24 scheduled in our table. Since conjunctive, disjunctive, and alternative propositions obey the law of commutativity, in their case the change of order as such gives rise to immediately equivalent propositions. But the law of commutativity does not hold for hypothetical propositions; "if $p$ then $q$" is not equivalent to "if $q$ then $p$." Nevertheless, for each hypothetical proposition there exists an equivalent hypothetical of converse order, obtained by substituting for the original elements their contradictories; "if $p$ then $q$" finds its converse equivalent in "if $q'$ then $p'$." In the light of these considerations our system is seen to consist of a self-contained whole of 48 different propositions, exemplifying three distinct propositional forms and their denials, viz., *conjunctive, alternative,* and *hypothetical* propositions, the disjunctive being simply the denial of a conjunctive, and not a noetically distinct form of assertion. This system has been exhibited as revealing an intricate symmetrical network of equivalences and contradictions.

6. Certain two-member propositions have been omitted. Their omission must be accounted for, or the symmetrical and self-contained character which we have stressed will seem devoid of logical significance, as being due to an arbitrary selection. The traditional disjunctive "either-or" form with exclusive interpretation, is not included. And for very good reasons: it is merely the idiomatic expression for the logical product of two propositions which *are* included, namely, the alternative "either-or" and the disjunctive "not both-and." It is therefore logically superfluous, however linguistically convenient. Besides, its inclusion or recognition as a separate form would tend to confusion, since it is formally indistinguishable from the alternative "either-or," a proposition which cannot be omitted without creating a logical gap. Another two-member proposition which finds no place in the system is "since (or because) $p$ therefore $q$." The reason for the omission of this form touches important issues of logical principle. The form in question has for its logical consequents the hypothetical "if $p$ then $q$," and the conjunctive "both $p$ and $q$"; but it is not equivalent to either, or to both taken together. The logical remainder in this proposition is the assertion that $q$ is true *because* $p$ is true, or that $p$ furnishes a *reason* for $q$, or that $q$ has a *ground* in $p$, or that $q$ is a *consequent* of $p$, or that $q$ can be *inferred* from $p$, or that $q$ *follows* from $p$, or, as a final variant, that $p$ *implies* $q$. It is this logical remainder which has no place in the system we are here propounding. This may most readily

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be seen by exploring the meaning of its contradictory. To deny that "$p$" implies "$q$" is to assert that these propositional elements are either independent and mutually non-relevant, or if relevant, that nevertheless "$q$" can not be inferred from "$p$." This denial does not affect the conjoint truth-values of "$p$" and "$q$"; they may both be true, or both false, or either may be true and the other false. In *Principia Mathematica,* however, as a consequence of the virtual identification of "$p$ implies $q$" with "if $p$ then $q$," it follows that "$p$ does not imply $q$" is equivalent to the assertion that $p$ is true and $q$ is false, quite in accordance with our table.[3]

The assertion of logical dependence, "$p$ implies $q$," for which proposition the name *implicative* should properly be reserved, is represented in our system only by a *consequent,* not by an *equivalent.* The denial of an equivalent is, of course, identical in logical force with the denial of that of which it is the equivalent, but the denial of a consequent can not be identical in import with the denial of its "antecedent," for otherwise the denial of the antecedent would entail the denial of its consequent—a logical fallacy. The consequent in question, "if $p$ then $q$," finds its contradictory in the conjunctive proposition "both $p$ and $q'$." But this is obviously not the simple contradictory of "$p$ implies $q$" but rather something like a

[3] Critics are quite generally beginning to recognize the linguistic ineptitude of defining "$p$ implies $q$" through the medium of a disjunctive or alternative or hypothetical proposition involving "$p$" and "$q$" in their positive or negative truth-values. The fact that the definition in question has been presented as *nominal,* might seem sufficient to disarm criticism, since a nominal definition does not pretend to be the analysis of an existing concept. However, this by no means disposes of the question whether the choice of definition and terminology is suitable or inept, clarifying or confusing. It can not be denied that the concept of implication had an existence in the logical consciousness prior to the appearance of *Principia Mathematica;* nor that this concept continues to play a rôle in our thinking as something different from the definition of the symbol "implies" offered in that work; nor that the simultaneous existence of two variant conceptions expressed by the same symbol (word) may very well tend to confusion; nor that the actual widespread existence of this confusion is proved by the vividly paradoxical impression produced on most minds by the so-called "queer" propositions of the calculus, propositions which in reality are wholly unparadoxical, and are clearly exposed in all their commonplaceness as soon as they are divested of their inept terminology, and given the literal meaning they have by definition. Nor can it finally be denied that the terminology in question has had a mischievous influence upon logical thinking, especially upon attempts to interpret the calculus in its epistemological significance, leading Mr. Russell to overvalue the calculus in its relation to the logic of inference, Professor Lewis to envisage the calculus as a new and different species of logic, and causing us all to stumble over the confusing pseudo-concept of "material implication," which form of words is not far from being a *contradictio in adjecto.* But this is something which needs a fuller discussion than is suitable to a note in relation to a note.

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contrary. For the implicative proposition can also be denied by "*p* is independent of *q*," and the true contradictory is the simple denial itself, or its equivalent in a complicated alternative proposition, as was shown above. Thus the implicative proposition, or any proposition into which it enters, has no place in our system, since its distinctive logical content lies in a different logical dimension from that of the propositions there included.[4]

7. The system of propositions exhibited in Table II throws a clear light upon the distinction between *categorical* and *conditional*. This distinction of the traditional logic has been severely criticized, but on insufficient grounds. It has been said that hypothetical and alternative propositions are in a sense categorical, and that universal propositions are in a sense hypothetical; which seems to prove that universal propositions are in a sense categorical, and also proves the

[4] This seems to be a suitable place for a protest against the growing custom of describing the calculus of "material implication" as *extensional*, on the ground that genuine noetic implication is *intensional*. This is to confuse a terminology which it is very important to keep clear and distinct. It is, of course, true that genuine or noetic implication *is* a matter of content, but this does not justify the designation of the calculus which omits such implication from consideration, as extensional. Extension and Intension are not logical opposites, but supplementary logical differents. Truth is also a matter of content, and truth is a concept which enters into the calculus. What is meant by the extension of a proposition? It is impossible that this can mean anything else than its *object* or application: the place or places in the universe of reference where its content is claimed to be exemplified, where its intension exists or is said to exist. And while truth is a matter of intension, it is also a matter of extension in the sense just noted; for unless the extension of a proposition is determined, it will be found quite impossible to verify or refute it, i.e., determine its truth-value. This point is exploited (as I think, mistakenly) in Royce's version of the ontological argument as propounded in *The Religious Aspects of Philosophy*, under the heading: "The Possibility of Error." What is really meant by the terminology against which this note is a protest, is the following: In "if *p* then *q*" or its equivalents, the truth-values of *p* and *q* may be independent of *one another's* logical contents, each having a value dependent solely upon its *own* independent intension; the proposition does not assert any relation between their several contents. Thus their conjoint truth-values are in so far logically accidental, and the propositions asserting them are contingent propositions, not necessary noetic truths. If it is clearly understood that the reference is solely to the *conjunction* of the truth-values, and not to the truth-values in themselves, the calculus may *in this restricted sense* be called non-intensional. But it is meaningless to call it extensional on this account, since all propositions are *ipso facto* extensional; for they necessarily have an object to which they refer, and it is this object alone which is capable of determining their truth or falsity. And in spite of a certain relative justification, it is dangerous to call the calculus non-intensional; for unless the above specific restriction is borne in mind, the practise may lead to forgetfulness of the fact that truth and falsity are concepts of the calculus, by virtue of the fact that it includes propositions; and these concepts are meaningless without reference both to the intension *and* the extension of the propositions to which they refer.

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criticism to be a pretentious way of saying precisely nothing. To be sure all propositions, when given an independent expression as complete units of meaning, claim implicitly to be true, and this claim is necessarily unconditional. This principle naturally holds for both elementary and compound propositions. But the latter have propositional elements which may or may not be unconditionally asserted, and it is in respect of these propositional elements that the distinction between categorical and conditional has validity. "Both *p* and *q*" is an obviously categorical proposition; it assigns determinate truth-values to "*p*" and "*q*." "Either *p* or *q*" is a conditional proposition; it does not assign determinate truth-values to "*p*" and "*q*": neither of these elements is asserted categorically. The alternative proposition is compatible with any one of three situations with respect to the truth-values of "*p*" and "*q*"; it definitely excludes only one. The fact that it has the force of eliminating one possibility out of four shows that it asserts a condition *affecting* the truth-values of "*p*" and "*q*" without determining them. The same reasoning applies to the hypothetical proposition. The truth-values of its propositional elements are only partially determinate, which means that they are conditioned. The objections urged by recent writers to the traditional name of this proposition are neither clear nor convincing. The hypothetical proposition is literally and obviously both hypothetical and conditional; and while it shares the latter trait with disjunctives and alternatives, the former character is *qua* explicit, a peculiarity of its own distinctive noetic form. The consequent of an hypothetical proposition is asserted, not absolutely or categorically, but conditionally upon an hypothesis, viz., the *hypothesis* of the antecedent, which is not the same as the *categorical assertion* of the antecedent. To throw additional light upon the variations of status to which the members of compound propositions are subject, in consequence of the noetic import of the propositions in which they occur, let us consider a compound proposition wholly extraneous to our system, like "*p* and *q* are propositions." We have already seen that propositional members may be categorically asserted; and that they may be conditionally asserted as in disjunctive, alternative, and hypothetical propositions, each of which represents a noetically distinct form of conditioning. But all forms of conditional assertion stand midway between categorical assertion on the one hand, and the mere naming or conceiving of propositional contents on the other. A proposition like "*p* and *q* are propositions" is an assertion *about* propositional members, but not an assertion *of* propositional members (that is of "*p*" or of "*q*"), either categorical or conditional. The truth values of "*p*" and "*q*" are in this case left wholly indeterminate by the assertion into which they enter as

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members; the symbols "*p*" and "*q*" are not expressions for propositions, but expressions for the *names* of propositions, the propositions being conceptually or non-assertively represented. The symbols are here dedicated to this function by what the schoolmen used to call *suppositio materialis,* just as in the parallel case of "runs is a verb," where "runs" is a noun, the name of a verb, and the expression for the concept of the verb "runs." Since such a proposition asserts nothing whatever about the truth-values of the members "*p*" and "*q*" (it has other propositional members, however, which are categorically asserted), it does not find a place in our system, which is confined to such two-member propositions involving "*p*" and "*q*" as do affect in some way the truth values in question. In compound categorical propositions of the form shown in our table, the truth-values of the propositional elements are wholly determinate; in compound conditional propositions the same truth-values are partly determinate and partly indeterminate, i.e., conditioned; in compound propositions involving propositional elements in the manner of our last typical example, these truth-values are wholly indeterminate. In this sense, therefore, conditional propositions present propositional elements in a manner midway between full or categorical assertion on the one hand, and complete non-assertion on the other. But to present a content non-assertively is to present it conceptually; and these considerations when reflectively pursued, indicate that the distinction between conception and assertion is both real and qualitative, in spite of the attempts of recent logicians to emasculate it by making it a matter of degree.

8. Herewith is presented a summary "brief" of the preceding argumentation. Disjunctive, hypothetical, and alternative forms of assertion present three noetically distinct ways of conditioning the truth-values of their propositional members; but these three different ways are nevertheless subject to a law of equivalence. Conjunctive propositions assert their propositional elements categorically. Compound propositions may contain propositional elements in such a form as wholly to suspend the antithesis between categorical and conditional with respect to them. This happens when the elements in question are not asserted in *any* manner; whence these elements are, strictly speaking, not propositions, but the concepts of propositions, so that their presence as members affects the noetic character of the assertion as a whole not otherwise than if they happened to be the concepts of non-propositional entities. That a simple proposition should be classified as categorical is an obvious consequence of the fact that every assertion assigns to itself implicitly a positive truth-value. And since a simple proposition has itself for its sole propositional element, the truth-value of that element is *ipso facto* determinate.

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9. The case of the universal proposition, which recent logic attempts to distinguish from the particular as not claiming existence for its subject term, and *on that account* asserts it to be hypothetical in logical import, must be briefly discussed. It is doubtless a fact that "All wood is combustible" has a hypothetical equivalent in "If anything is wood, it will burn." But the existence of such hypothetical equivalents is not a peculiarity of universal propositions; nor does it at all depend upon the absence of an implied claim to factual existence for members of the class indicated by the subject term. It depends instead upon the logical fact that the subject of every proposition, whether universal, particular, or singular, has an implied *denotation* which can be rendered explicit in some other proposition, either as assured or as hypothetical. "Most politicians are unscrupulous" is sufficient ground for asserting, "If a man is a politician, it is more than an even chance that he is unscrupulous" where the hypothetical quality arises from making questionable the *application* of the original proposition, without in the slightest degree impugning the categorically factual existence of politicians. Similarly, "Socrates is a philosopher" implies "If this man (say, the man walking along the street in a threadbare cloak) is Socrates, then he is a philosopher"; here the hypothesis is clearly a matter of identification, not of existence. The implied hypothetical is in no case *identical* with the original proposition and can not therefore nullify its categorical character. The derived proposition raises *explicitly* a question which *sleeps* in the original; it is by virtue of the explicit formulation of this question that the hypothetical proposition comes into existence. All propositions assume implicitly some sort of denotation (which need not be factual) for their subject terms. But whatever is implicit in one proposition may be rendered explicit in another. When the denotative reference of the subject term in any proposition is rendered explicit, it may be regarded as either certain or uncertain. If certain, we derive from "All $S$ is $P$" the proposition, "Since $x$ (or this) is $S$, it is $P$." If the identification is for any reason uncertain, whether because of doubt as to factual existence or for some entirely different reason, we express this uncertainty of identification (or application) by the hypothetical "If $x$ (or this) is $S$, it is $P$." Every proposition has thus an hypothetical implicate, because every proposition makes an implicit assumption as to denotation, which assumption is subject to challenge, doubt, or hypothesis. But the explicit reference to that which was implied in the original proposition, requires a new proposition; and the noetic character of this new proposition is irrelevant to the noetic character of the original. But if for the reasons stated, universal propositions are to be regarded as hypothetical, then all propositions must be so regarded; which looks like a *reductio ad absurdum.*

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10. The reader trained in logistics will perhaps wish to raise a question about the notation of the table to which we have throughout referred. It has been assumed that the assertion of "$p$" is equivalent to the assertion that "$p$" is true, and that the denial of "$p$" ($p'$) is equivalent to the assertion that "$p$" is false. The justification for these assumptions lies in the fact that every proposition *qua* assertion implicitly claims to be true; and in the further fact that the denial of a certain state of affairs is a primary assertion, for which the statement that the proposition asserting it is false, constitutes a secondary reflective equivalent. When the implicit truth-claim of an elementary proposition is rendered explicit, we obtain a proposition of the form "$p$ is true," which again involves an implicit truth-claim which may again be rendered explicit in a third proposition, and so *ad infinitum*. It would be interesting to pursue the significance of this remarkable, inexpugnable character both of the truth-claim as such, and of its implicit quality; but the matter does not seem to be sufficiently germane to the special subject of the present note.[5] It may be permissible, however, to point out that

[5] The point that an implicit truth-claim attaches to all propositions *qua* independent logical entities, leads to some very interesting considerations in the case of self-reflexive propositions, or such as include themselves within the scope of their own assertions. Logical principles, generally speaking, have this character; they deal with propositions in terms of propositions, refer to concepts in terms of concepts, and describe knowledge in terms of that which itself claims to be knowledge. A proposition may also be set in a logical context which has the effect of making it self-reflexive. This is the case in the puzzle of the "liar," as well as in a number of analogous logical inventions, like the story of the crocodile and the mother whose child he threatened to eat, or the story of the hero who daringly offered himself as a sacrifice in order to break down an ambitious plan of a medieval ruler to exterminate all liars from his realm. In all these cases, the *content* of the proposition is in effect made to claim falsity for the proposition. But since the *form* necessarily claims truth, contradictory consequences ensue. On the other hand, whenever a self-reflexive proposition has a content which claims truth for itself, the complete harmony between content and form in this respect precludes the emergence of this sort of difficulty. A theory of types is not necessary for the clearing up of these particular difficulties; and in the case of propositions, such a theory may even be misleading, in so far as it suggests that no proposition can meaningfully apply to itself, or that any statement about all propositions is meaningless. If such were the case, logic and epistemology could not exist. On the contrary, it is precisely of the essence of the reason to apprehend itself and other things; and no better indirect testimony to the truth of an epistemological theory can be found than that it explains itself in explaining theories in general. An epistemology which fails to account for its own existence in terms of its own theory, is *ipso facto* not only false but absurd. There is a warning in the fact that Professor Dewey's theory of knowledge envisages knowledge in general as a process of *reconstruction*, while it insists on explaining philosophical knowledge, itself included, as empirical, and *qua* empirical as essentially a process of *finding*. Surely finding is not the same as reconstructing.

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there is a complete analogy between the implicit truth-claim attaching to every proposition *qua* assertion, and the implicit validity-claim (validity is a species of truth) that attaches to every inference *qua* inference. The attempt to make this claim explicit, and as such to include it among the premises, creates a new inference with a new implicit validity-claim, and thus involves us in an infinite regress.[6] But the discussion of these interesting matters belongs elsewhere, as does the discussion of the various forms of compound argument that may be constructed upon the equivalences exhibited in our system, when the attempt is made systematically to exhaust all the possibilities. Suffice it to say that a little reflection will demonstrate how fragmentary the prevailing theory of conditional arguments is. New forms of disjunctive, hypothetical, and alternative arguments may readily be discovered by a methodical search (including two new

[6] Lewis Carroll makes this intuitively evident in his witty account of the conversation carried on between Achilles and the tortoise, on the subject of the demonstration of a certain theorem in Euclid. The idea that noetic principles of implication, or their specific expressions, should be formulated as premises in order to make the inferences presupposing them rigorously valid, is at bottom a sceptical idea. For it is tantamount to a denial of the existence of necessary logical truths. Contingent truths must be explicitly asserted, or be psychologically implied by the context, because contingent truths are not immanent in the reason; necessary logical principles are immanent in the reason itself, are implied everywhere without regard to the special context, and their explicit avowal has an entirely different significance from that which attaches to the avowal of contingent presuppositions. The value and necessity of their explicit formulation is not to be denied; but it must be remembered that the purpose of such formulation is not to validate inferences, but to attain epistemological clarity. On the other hand, the theorems of the calculus are in the strictest sense validating forms. For they are avowedly theorems of "material implication," which means that they are contingent assertions, not necessary noetic truths. Hence they must be explicitly formulated and avowed, for they can not be supplied out of the resources of the reason itself. As a matter of fact, they are merely premises which render certain enthymemes formally complete, and thus prove their validity. In this sense they are validating forms; and it is a further fact that every proposition can in the same sense be regarded as *validating*, and in so far as it is represented schematically as a propositional form, it becomes a validating *form*. Thus for example: "If $p$ then $q$" is a contingent assertion unless taken in a special sense, not involved in the calculus; "$p$ implies $q$" is also a contingent assertion in the sense assigned to it by the calculus. Either of these propositions, when taken as a premise, validates the inference from "$p$" to "$q$." But the entire inference *qua* formally complete (the so-called hypothetico-categorical syllogism) presupposes an entirely different principle of implication as applicable to itself, one which belongs in a different logical dimension. This truly noetic principle is not a validating form; it does not need to be stated in order to make the inference valid. An indirect admission of this state of affairs is to be found in the calculus itself; for it asserts that the "principle of deduction" is not expressible in terms of its own symbols, is not a theorem of the system, but remains outside the system as a rule for manipulating and interpreting its symbolic expressions.

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forms of the dilemma); and what is more important, an entire system of equivalences between such forms of argument stands ready to be exposed. It is possible that the writer may find opportunity to develop this point in a supplementary paper on compound arguments; the interested reader, however, is doubtless capable of doing this for himself.

11. A disjunctive proposition is the denial of a conjunctive proposition, or the assertion that the conjunctive proposition in question is false. Now it is evident that a conjunctive proposition is true only if both its members are true, but that it becomes false as soon as one member alone is false, irrespective of the logical status of the other. Here we have the *fons et origo* of the so-called paradoxical propositions of the calculus. For the calculus *defines* implication as the falsity of a conjunctive proposition, i.e., "$p$ implies $q$" is defined as "the falsity of $p.q'$," by which the latter becomes the equivalent of the former. But this conjunction is false whenever $p$ is false, whatever be the meaning or logical status of $q$; and it is also false whenever $q$ is true, whatever be the meaning or logical status of $p$. Either condition satisfies the definition of "$p$ implies $q$"; hence it follows at once that a false proposition implies any proposition, and that a true proposition is implied by any proposition. What this *means*, however, is something very different from the sense immediately and naturally conveyed to the mind by the words used. For it means nothing more nor less than a false proposition makes any conjunction into which its assertion enters a false conjunction; and that for precisely the same reason a true proposition makes false any conjunction into which its denial enters. All the other "paradoxical" propositions may be similarly disrobed and deprived of their misleading verbal investiture. When this is done, they stand revealed as bare of the least trait of novelty or oddity or mysterious paradoxicalness; they are commonplace theorems in the traditional logic. Their existence in the calculus offers not the slightest reason for supposing that the calculus has discovered or invented a new species of implication. The *language* may indeed be Russellian and modern; but the *thought* is after all of some importance in logic, and the thought in this case is entirely Aristotelian and traditional. Is it too much to ask that the science of the reason be formulated in a language so natural and perspicuous as to give no encouragement to the obscure promptings and romantic imaginings of logical superstition?

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## BOOK REVIEWS

*Bishop Berkeley: His Life, Writings, and Philosophy.* J. M. Hone and M. M. Rossi. With an introduction by W. B. Yeats. New York: The Macmillan Company. 1931. xxix + 286 pp.

This new book on Berkeley is an important addition to the existing studies of the Bishop of Cloyne by Fraser, Johnston, Metz, and others. It is both a biographical study of Berkeley the man and a philosophical analysis of Berkeley's writings. From information given in the introduction we learn that the biographical study was done by Mr. Hone and the philosophical analysis by Mr. Rossi; but the book reads like a well unified work and betrays few signs of dual authorship.

The biographical study is meticulously done, and is supported by abundant documentary references. In this phase the book will supersede all previous studies. It corrects quite a few details in Fraser's account of Berkeley's life and supplies some of his omissions (*cf.*, e.g., pp. 18, 55, 77, 100, 125; p. 18). Against the articles of Lorenz and Erdmann (in the *Archiv für Geschichte der Philosophie,* 1900–1905, and the publications of the Prussian Academy of Science for 1919), it contends that we can not succeed in any attempt at a chronological ordering of the entries that make up Berkeley's *Commonplace book;* and against Fraser it contends that the date of these entries is probably 1708–1710 instead of 1705–1708. Both of these contentions seem sound and substantiated (pp. 257–261, 275–276). It makes the interesting suggestion (p. 140) that Berkeley's wife had influence on the later developments of his mind. And it considers as likely that Samuel Johnson's eager and persistent questioning of Berkeley had much to do with Berkeley's return to philosophizing at a time when Berkeley's interests were more and more becoming "practical morality, architecture and scientific curiosities, politics, economic conditions, the Bermuda enthusiasm" (p. 153). Many readers of the book may echo the judgment of Mr. Yeats in his introduction, that the book makes Berkeley stand forth as a very real and solid (if not altogether admirable) figure in the interesting Irish-English-American world of the early eighteenth century.

In its appraisal of Berkeley's contribution to philosophy and its interpretation of his thought this new book differs emphatically with G. A. Johnston's work. Mr. Johnston held that Berkeley was "naturally the keenest mind in the history of British philosophy," and that "each one of his books marks a stage in his gradual progress," in which there was no *volte face* or even change of direction (*The development of Berkeley's philosophy,* pp. 325, 258). The new book

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serves to correct these almost fantastically eulogistic judgments, though at times the zeal of combat leads its authors to overstatements of nearly equal degree of exaggeration. Berkeley, we are told, was not interested in philosophy except at certain periods in his life; he had no "leading, continuous, all-directing thought"; his ideas were "sometimes superficial and sometimes contradictory"; and "his first works, eagerly constructed, were relinquished and forgotten with a marvellous facility, and almost disowned at the end" (pp. 249, 253).

Of course the historian may speculate over such questions as to what extent Berkeley's enunciation of his "New Principle" of immaterialism was controlled by his desire to increase the reputation of the group of young Irish writers who felt a kind of nationalistic antagonism to Newton and the English mathematicians and scholars generally.[1] But on such questions speculation is more journalistic than crucial. And philosophically it is almost inconsequential. If the historian sticks to strictly philosophical questions, there are two points of major importance in this new book on Berkeley. On the first, the new book does not depart as much as its authors seem to suppose from the more moderate ways in which Mr. Johnston stated his position a few years ago. On the second, it upsets, in the opinion of the present reviewer, the position of Mr. Johnston and establishes successfully an alternative position.

The first point concerns the "development" of Berkley's thought. In his early work Berkeley attacked abstract ideas, distrusted reason, and defended a sensationalistic empiricism so extreme as to be incompatible with others of his beliefs, e.g., with his belief in soul or spirit. In his later work he accepted ideas in the mind of God as archetypes of our ideas, disparaged sense, and turned more and more to a kind of mysticism. The transition was not, however, an orderly or gradual progression. His empiricism was a tool against mathematicians and Newtonians; his mysticism and theory of "notions" were a tool for the defence of his own theological beliefs when critics accused him of asserting or implying dangerous heresies. He explicitly abandoned his early empiricism in *Visual language vindicated* in 1733 where he sought to clear himself from the charge of giving assistance to the deists; and he reasserted his early empiricism in *The Analyst* in 1734 where he again assailed the mathematicians (pp. 180–183).[2] There is not so much a "development" of Berke-

[1] Though spiritually an Irishman of passionate nationalistic sentiment, Berkeley was not, Hone and Rossi tell us, an Irishman by descent. "Now so far as can be ascertained, Berkeley himself had no trace of pure Irish blood, and he belonged by association and religious sympathies to a comparatively recent English colonization" (p. 29).

[2] A similar wobbling seems to occur in Berkeley's discussion of the connection between fire and the nature of the soul. He denies the fire-theory of the soul in *Alciphron*, affirms the elementary fire to be the *anima mundi* in *Siris*, and then later republished *Alciphron* without altering its denial (pp. 218–219).

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ley's views on the relation of sense and reason as an alternation in the audience to whom he was addressing his successive works! "It can not be considered our duty to defend Berkeley and to provide arguments to show a continuity in his thought where he leapt from one solution to another only because he changed his mind" (p. 216). Particularly is this true, since he changed his mind, not as the result of reflection on a problem for its own sake, but as the result of a shift in the antagonists to which his controversial remarks were directed.

The second point concerns Berkeley's alleged Platonism. Berkeley's early work was, even in its immaterialism, theism, and emphasis on the soul, devoid of Platonic influences. "The old saying that Berkeley is only a revised Locke . . . is at bottom sound" (p. 38). And even in his later works such as *Siris*, even though he had his portrait painted with his hand on Plato's works, he was not, properly speaking, a Platonist. In *Siris* Platonic tenets occur only occasionally and in subordinate places (p. 219). Berkeley was influenced by a Plato that came through Porphyry and Plotinus and the neo-Pythagoreans. His affiliations were with the Cabbalists, i.e., with those who sought to use a philosophic idealism to support the magical-medical practices, which, without such a support, would appear too patently to be pseudo-science. He wanted Plato to assist him in his defence of tar-water as a panacea for all human ills; he thought Plato would assist him in this enterprise because he regarded Plato as upholding a kind of dynamic urge that runs throughout nature and binds all nature into a mystic whole. He may have read Plato more directly than most of the Cambridge Platonists of the previous century; but his "Platonism" was certainly no more, and probably less, true to Plato. When one speaks of Berkeley's "Platonism" and reads the name of Plato in Berkeley's treatise on tar-water, one should also consider this statement. "The time of Berkeley was not only the time of illuminated reason, of free-thinking, and of science in the making: it was also the time of Swedenborg and Cagliostro, the period in which speculative free-masonry arises, a time of anxious searching for miracles without God and for marvels greater than the slow tentative accomplishments of science" (p. 233).

STERLING P. LAMPRECHT.

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## JOURNALS AND NEW BOOKS

RECHERCHES DE THÉOLOGIE ANCIENNE ET MÉDIÉVALE. Quatrième Année. 1932. Juillet. L'École d'Anselme de Laon et de Guillaume de Champeaux. Nouveaux documents: *H. Weisweiller.* Les débuts

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du traité de la prudence au moyen âge: *D. O. Lottin.* Die Texte der Trinitätslehre in den Sententiae des Simon von Tournai: *M. Schmaus.* La "justice" envers le démon avant saint Augustin: *J. Rivière.*

THE PHILOSOPHICAL REVIEW. Vol. XLI, 5. Ernst Troeltsch's Philosophy of History: *Eugene W. Lyman.* Descartes' Philosophy of Mind: *Ledger Wood.* Discussions—The Time-Retarding Journey Again: *Evander B. McGilvary.* The Travels of Peter, Paul, and Zebedee: *Arthur O. Lovejoy.* A Reinterpretation of Relativity: *Roy W. Sellars.*

ERKENNTNIS. Band 3, Heft 1. (Zugleich Annalen der Philosophie, Band XI, Heft 1.) Positivismus und Realismus: *Moritz Schlick.* Die Kausalbehauptung und die Möglichkeit ihrer empirischen Nachprüfung: *Hans Reichenbach.* Anmerkungen zum Kausalproblem: *Erwin Schrödinger.* Schlussbemerkung: *Hans Richenbach.* Über die Ziele und Probleme der Logistik: *Jörgen Jörgensen.*

GIORNALE CRITICO DELLA FILOSOFIA ITALIANA. Anno XIII, Fasc. IV. Le correnti neivitalistiche e l'idealismo: *Leonardo Grassi.* Neo-realismo e behaviorismo anglo-sassone: *Fausto Meli.* L'etica di Giuseppe Butler: *Eugenio Garin.*

SCIENTIA. Vol. LII, N. CCXLIV–8. L'origine de la Terre: *E. Belot.* Das Problem der Kernstruktur: *G. Beck.* Thoughts on the Problem of Biological Organisation: *J. Needham.* L'evoluzione dei metodi nella filologie classica: *B. Lavagnini.*

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## NOTES AND NEWS

The Tenth Annual General Meeting and Congress of the Australasian Association of Psychology and Philosophy was held at the University of Sydney, August 19–23, 1932. The program was as follows:

First Session: H. T. Lovell, *chairman.*
Presidential Address: "Judgment"—*W. A. Merrylees.*

Second Session: A. H. Martin, *chairman.*
"A Psychological Theory of Mind"—*W. M. Kyle.*
"Art and Philosophy"—*N. Porter.*
"Beauty is Objectively Real"—*R. R. M. King.*

Third Session: J. Anderson, *chairman.*
"The Basis of Political Obedience"—*W. Macmahon Ball.*
"Legality and Ethics"—*F. W. Fowler.*

Fourth Session. (Joint meeting with Section J—Education, Psychology and Philosophy—Australian and New Zealand Association for the Advancement of Science.) Francis Anderson, *chairman.*
"Problem Solving by Man and Mammals"—*A. H. Martin.*

Fifth Session. (Joint meeting with Section J.) W. R. Boyce Gibson, *chairman.*
"Status of Sensa"—*W. A. Merrylees.*
"Realism v. Relativism in Ethics"—*John Anderson.*

Sixth Session: W. M. Kyle, *chairman.*
Business Meeting.
"Children's Phantasies"—*Ruth Griffiths.*
"The Measurement of Temperament and Character"—*G. T. Roscoe.*
"Two Cases of Color Blindness"—*E. G. Robertson.*
"Some Aspects of an Investigation into the Capacity to Judge Small Distances"—*G. F. K. Naylor.*

Seventh Session: W. A. Merrylees, *chairman.*
Commemoration of the Tercentenary of the Birth of John Locke:
"Locke"—*John Anderson.*

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Dualisms Good and Bad (I). ARTHUR O. LOVEJOY.
A Spinozistic Fancy. B. A. G. FULLER.
Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 14. July 7, 1932.**

Physics and Metaphysics. EVANDER BRADLEY MCGILVARY.
Dualisms Good and Bad (II). ARTHUR O. LOVEJOY.
Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 15. July 21, 1932.**

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Is There Logical Force in Demonstration? MARIE C. SWABEY.
Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 17. August 18, 1932.**

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Contingency and the New Era in Metaphysics (II). CHARLES HARTSHORNE.
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**Volume XXIX. No. 18. September 1, 1932.**

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# THE JOURNAL OF PHILOSOPHY

## RELEVANCE AND SCIENTIFIC METHOD

A. S. EDDINGTON'S charming reduction of "An elephant slides down a grassy hillside . . ." to a set of pointer-readings[1] illustrates strikingly the abstract character of the goal and method of science. Eddington correctly asserts that science can not possibly be *all-comprehensive,* can not exhaust reality (though I think he is decidedly in error when he claims that science can never get at the *intrinsic* nature of the real objects it measures). But Eddington leaves his readers (at least he leaves *me*) with the impression that this abstractness and partiality of science is a defect. Hence I beg leave to quote at length an equally charming parable of the absurdity of eschewing all abstraction. It is found in A. D. Ritchie's *Scientific Method.*

"Once long ago (the precise date escapes my memory) a new librarian was appointed to a certain library. One morning it occurred to him to examine the catalogue. After some study he turned to an assistant who chanced to be present, and said: 'I do not think I like this book very much. It is a fallacious and, in a sense, inaccurate document, and what information it contains is trivial. I see nothing said about any book except the author's name, the title, the size of the book, and trifles of that sort. Everything mentioned in here is to be found in the book itself, and much more beside that is of greater interest. What is put down is correct enough, I suppose, as far as it goes; but to my mind "suppressio veri" is just as misleading as "suggestio falsi"; worse, in fact, because the deception is subtler. Suppose now, we abolish the catalogue—' 'Oh, sir,' interrupted the assistant, 'the catalogue is indispensable—it gives the class-marks of the books.' 'So I have observed,' replied the librarian with scorn; 'and they likewise are to be found on the books.' 'But how,' wailed the assistant, 'but how are readers to find the books?' 'As they do now,' the librarian said, fixing the assistant with a look, as of the stony basilisk, 'by looking on the shelves!' The assistant fainted. The librarian, who was really quite a kindly man, had him taken out into the fresh air where he slowly recovered.

[1] *The Nature of the Physical World,* pp. 251 f.



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In the meanwhile the catalogue was burnt. All these events occurred a long time ago, as I have mentioned."[2]

I wish to assert that scientific knowledge is always abstract, and that it is not by that fact any the less valid knowledge. I wish, furthermore, to investigate what sort of ground is necessary to substantiate the claim that abstract knowledge can be completely and ultimately valid.

Abstract knowledge always tacitly involves the claim that not every factor in the universe is equally relevant to any given one. To claim that *a* is essentially relevant to *b* is to claim that you can not have true knowledge of *b* without knowledge of *a*. Hence if one were to assert that everything in the universe is essentially relevant to *b*, one would have to admit that *b* can be truly known only if everything in the universe is known, i.e., that an abstract knowledge of *b*, omitting even one of its relational properties, is impossible.

The sort of knowledge science seeks is abstract. Inevitably, then, scientific thought and method must reveal the assumption that some things or characteristics[3] are irrelevant to others. Scientific method proceeds by seeking the relevant, by disdaining irrelevant factors by the cartload.[4] That scientific method does assume that not everything is relevant to everything else and that it does concern itself with a search for the relevant alone may perhaps be made clearer by a brief investigation of certain processes and concepts of vital importance in scientific procedure.

First, consider scientific observation and the concept of fact. It is a commonplace that the good observer must be one who knows what to look for, who has been properly trained in the confining of his attention to certain factors only in the total situation. The view that science starts by merely collecting facts, then classifying them, and finally theorizing about them is a caricature if it means that facts lie around loose, that sense experience comes perfectly articu-

[2] *Op. cit.*, pp. 111–112.

[3] I use "factor" to designate either a thing (existent) or characteristic (property).

[4] Morris Cohen, in his *Reason and Nature*, does not tire of reiterating this perhaps obvious yet nevertheless fundamental truth. I select as representative a passage where he is discussing imagination as a supposed opponent of reason. "But all imagination, poetic as well as scientific, is essentially selective, in the sense that it concentrates upon what is relevant to the task before us. Such studied selection in the interest of what is relevant takes place in scientific observation, in trained memory, and generally in all the processes of scientific knowledge, so that the growth of genuine scientific knowledge is itself a progress of the imagination, not in falsifying the order of fact, but in eliminating insignificant, accidental, and irrelevant elements" (p. 70).

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lated into members having equal scientific importance.[5] Scientific observation is selective. I think we can even say that a scientific fact is itself a selection, a product of selective observation. A fossil, a chemical reaction, a coefficient of friction, so far as they are elements in scientific knowledge (and only so far can they be of significance in scientific method), are abstractions. They omit, as irrelevant, hosts of factors truly present in the immediate experience of the scientist observing them. Immediate experience in its total concreteness is not abstract, but it is not, as such, a fact for science.[6]

When we turn to the process of scientific mensuration, the selectivity, the disregard of the irrelevant, is even more apparent. Norman Campbell points out that only those properties for which there are rules closely analogous to the basic axioms of arithmetic ("rules of counting") are measurable. He says, "If a property is to be measurable it must be such that (1) two objects which are the same in respect of that property as some third object are the same as each other; (2) by adding objects successively we must be able to make a standard series one member of which will be the same in respect of the property as any other object we want to measure; (3) equals added to equals produce equal sums." By way of illustration he uses the property weight. "Weight is measured by the balance. Two bodies are judged to have the same weight if, when they are placed in opposite pans, neither tends to sink; and two bodies are added in respect of weight when they are both placed on the same pan of the balance. With these definitions of equality and addition, it is found that the three rules are obeyed."[7] Science has been particularly ingenious and fortunate in devising operational rules of dealing with certain experienced properties such that addition, subtraction, equating, and other fundamental mathematical processes can be given empirical meaning relative to these properties. But obviously science is here selecting and disregarding. Within the totality of characteristics of a general sort of property which is itself measurable, such as weight or length, only a few characteristics are relevant to the rules for measurement of that property. For example, the rule for adding lengths is to place them end to end in a straight line. But this is obviously a selective principle, forcing the measurer to disregard all sorts of other combinations of distances which actually are characteristic of the thing measured. Furthermore, there are many general properties of things for which rules

[5] Poincaré's first chapter in *Science et méthode* is on "Le choix des faits," and he begins it by urging, "Nous ne pouvons connaître *tous* les faits, puisque leur nombre est pratiquement infini. Il faut choisir. . ." (p. 7).

[6] *Cf.* Cohen, *op. cit.*, ch. iii, §1, on "Reason and the Gathering of Facts."

[7] *What is Science*, p. 117.

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analogous to the axioms of arithmetic have not yet been formulated and perhaps never can be. These properties (including perhaps all of the so-called secondary and tertiary qualities) are disregarded by the scientist so far as his method is one of measurement.[8]

In experimentation the scientific assumption that not everything is relevant to everything is so obvious that elucidation is an absurdity. An experiment is a process of observation under *controlled* conditions. To control a condition means to eliminate it, to make it invariant while other conditions are varied, or to vary it independently of the variations of other conditions. Each of these methods assumes that at least some other conditions actually occurrent in the universe are irrelevant to the controlled condition. Every experiment aims to discover the relevance or dependence of a phenomenon upon certain actual conditions as distinguished from other actual, but irrelevant, conditions. It is a process of determining which of the possibly important relations investigated really are important. Moreover, before the experiment starts, the experimenter must have chosen a group of such relations to be tested—i.e., he must assume as the basis of his experiment that a host of actual relations are irrelevant; and I am inclined to think that no experimental science ever has, can, or should experimentally validate this assumption completely in the case of even one of its experiments. Galileo rightly disregarded the phase of the moon and what he had eaten for breakfast when he rolled his ball down his inclined plane.

The concepts of cause and scientific law are likewise based on the assumption that some factors are irrelevant to others. The ideal scientific law includes *all* relevant conditions and yet *only* relevant conditions, and states precisely *how* they are relevant. As Cohen aptly states it: "Every mechanical or physical law asserts that a certain phenomenon or characteristic depends on one or a few factors and on nothing else. The acceleration of gravitation depends upon mass and distance. Everything else is indifferent to it. The freezing of water depends on temperature and pressure, and nothing else is relevant. To hold seriously to the popular dictum that everything is connected with everything else would make the scientific search for determinate connection meaningless."[9] Perhaps no actual

[8] It is clear from the above brief statement that I do not agree with Eddington's view that measurements are mere symbols of something outside them and intrinsically unknowable by means of them (*cf. The Nature of the Physical World*, pp. 259 ff.). A mensurational property is just as truly a characteristic of the thing measured as is any other of its characteristics, and the thing itself is nothing other than the unique togetherness of all its characteristics. See "Numerical and Qualitative Identity," to appear soon in *The Monist*.

[9] *Op. cit.*, p. 151.

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scientific law, even in mechanics, fully achieves this segregation of the sheep from the goats, of the relevant from the irrelevant. But that this is the ideal is clearly seen by the fact that laws are scientifically acceptable to the degree to which they approximate it. And what is here true of law holds also of the concept of cause. The doctrine that the total antecedent universe is the cause of any given event is certainly not a doctrine acceptable to science. In seeking causes science is seeking restricted, distinguishable factors within the universe. When the astronomer asserts that the cause of a solar eclipse is the interposition of the moon between the sun and the earth, he surely does *not* mean to include in the assigned cause the fact that Columbus discovered America in 1492; the latter is causally relevant to certain other events, but not to the solar eclipse. The very principle of the uniformity of nature itself, though apparently applying indiscriminately to all factors, really supposes that there are irrelevancies in the universe. If it means anything at all, it at least implies that some sequences of events are approximately repeated; i.e., it implies that the time and place (to say nothing of further characteristics of the total context) in which the sequence occurs are irrelevant to the sequence; the occurrence of the sequence does not depend upon them.

Finally, scientific theories and hypotheses involve selection and the tacit claim that relevance is a limited matter. If this were not so, there could not be *rival* theories of the *same* phenomena, the theories would be simply supplementary. The molecular theory of heat could displace the theory of a heat fluid only if it asserted a relation between heat phenomena and a possible cause which was considered to be not only different from, but incompatible with, that asserted by the adherents of the theory of a heat fluid. An hypothesis or theory is taken to be established or at least to be more probable than a rival to the extent to which it is borne out not indefinitely and in general, but by *relevant* observations and experiments; and these latter themselves, as we have seen, are selective. Furthermore, no theory is scientifically good unless it accounts for a limited, specifiable group of facts. If it accounts for other possible and actual facts just as well as those within its proper field, it is then not considered a good explanation of the latter. For example, capricious desire growing out of a sense of power might be an excellent theory to account for the whimsical commands of a tribal chieftain, but when extended to the inconstancy of the weather and the food supply, it becomes, scientifically, a very bad theory. I do not deny that a good theory may have much wider application than it is first thought to have, but this is because more facts are discovered to have characteristics relevant to it, not because it eliminates or softens the

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distinction between relevant and irrelevant characteristics. There is no such thing as a scientifically good theory of all facts taken indiscriminately in all their characteristics.

I have no doubt spent too much time elucidating the obvious; but it is well to be absolutely clear that scientific method is throughout dominated by the assumption that some factors in the universe are irrelevant to others. Now of course it may be contended that this very assumption vitiates scientific results or makes them only provisional. But I can see no *reason* for such an objection (unless the pious *faith* that everything is equally relevant to everything else is a reason). Furthermore, not only the success of science but also the fact that *all* knowledge as truly (though not as explicitly) rests on the same assumption as does science furnishes a pretty good reason for claiming that the above-mentioned objection is wrong. So without further ado I turn to the following question. How can the scientific assumption that some factors only are relevant to any given one be justified? What right has science to select, to confine its attention, to claim that its admittedly partial and abstract knowledge is true?

As a first type of answer to this question let us consider traditional mechanics. It claims that science (or at least physics) has a right to select and investigate a few factors out of the total content of experience because only these few are real (or are physically real). These are the so-called "primary qualities." As Professor Burtt, in his *Metaphysical Foundations of Modern Physical Science,* has well shown, these primary qualities thus selected by the early modern physicists were chosen primarily because of their mathematical character. Modern physics grew out of the conviction that the real world is mathematically simple; it hence cast every factor in experience not of this character into the limbo of a merely subjective and ghostly existence. But such a "bifurcation of nature," as Whitehead has shown, is untenable. Epistemologically it gives rise to a radical dualism whose inevitable conclusion, if logically thought out, is absolute skepticism—which is, of course, inconsistent with the claim to know *any* of the real characteristics of the physical world. But the following objection is perhaps more significant for our present purpose. Let us pass by the assumption that the only principle of relevance in the physical world is that of mathematical simplicity of connection. However we define what is relevant and what is irrelevant, does the mere fact that we have shown something to be irrelevant for physical science prove that it is unreal (or at least not physically real)? Odors and sounds and tastes may be wholly irrelevant to what physics studies—that fact alone does not show that they have no physical reality. Physics

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deals with abstractions; it can not justify itself by claiming that its abstractions are really not abstract, that they exhaust the total character of their physically real objects. We must, to borrow another phrase of Whitehead's, avoid the fallacy of "misplaced concreteness." In fact, I think we can safely accept the principle that everything experienced, just as it is experienced, is to be taken as real (and as physically real) until it is shown to be inconsistent with some other factor in experience likewise taken to be real. What the scientist correctly disregards as irrelevant can not thereby be correctly denied reality.

A second type of answer to the question we are considering is really a revolt against the one just mentioned. It may in general be called empirical or anti-metaphysical. It claims that everything experienced is equally real (or unreal, if you prefer), and that hence the principle of relevance is not determined by reality, but simply by the method and purpose of the scientist. This view has many forms, two of which I wish to consider, though they tend to pass into each other. They are positivism and pragmatism. The positivist says, essentially, that no two factors in experience are inherently any more or any less relevant than any other two. Relevance becomes wholly a matter of statistical correlation, i.e., relative frequency together in experience. Hence scientific method is essentially a process of formulating briefly or in summary those types of sequence or coexistence whose frequency in experience is at least relatively high; it disregards as irrelevant to any phenomenon all other phenomena whose correlation with the given one is low. Thus, for example, Karl Pearson says: "The universe is made up of innumerable entities, each probably individual, each probably non-permanent; all man can achieve is to classify by measurement or observation of characteristics these entities into classes of *like* individuals. Within these classes variation can be noted, and the fundamental problem of science is to discover how the variation in one class is correlated with or contingent on the variation in a second class."[10]

Before going further we must note certain difficulties in this positivistic view. In the first place, it talks about *like* individuals; it denies that any two experienced particulars are absolutely the same. But how does science judge whether particulars are sufficiently alike to be properly classed together? Surely not by considering one by one *all* the characteristics they possess.[11] Rather, *some only* of their characteristics are here used by science, viz., those considered im-

[10] *The Grammar of Science*, 3d edition, p. 165.

[11] Pearson himself says that particulars classified together "are not absolutely [the] same, because they really depend for sameness on an infinity of characters, only a very small number of which are or can in actual practice be examined and identified" (*op. cit.*, p. 158).

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portant or relevant. Hence *before* the process of correlation can get started, a judgment assuming difference in relevance must be made. Furthermore, the positivistic interpretation fails to justify the myriad cases where science, without an investigation of the frequency of correlation with the matter at hand, disregards multitudes of actual relations as irrelevant. For example, on the positivistic view science could not claim that everything but pressure and temperature is irrelevant to the freezing of pure water until it had investigated the correlation of the freezing of water with *every* other factor in experience. This would probably be an endless, and it certainly would be a puerile, undertaking. Finally, we should note that science is not concerned merely with what we have actually experienced, but also with possibilities which may, or perhaps can, never be experienced. It tells us confidently what *would* happen if certain conditions, and these only, were fulfilled. On the law of entropy and the supposal that no new factor producing difference of energy levels will arise, the scientist talks about a state of the universe which not only has never been experienced but probably has never occurred, viz., where all energy is equally distributed throughout space.

Positivism easily passes over into pragmatism. It does not stop with the claim that relevance is a matter of frequency of togetherness in experience. It goes on to say that this frequency is made the principle of relevance precisely because it satisfies the purposes of the scientist, because it is convenient to him, is economical of his time, or serves as a universal means helping in the attainment of any sort of purpose. Thus Pearson says, "The object served by the discovery of [scientific] laws is the economy of thought; the suitable association of conceptions drawn from stored sense-impressions, permits the fitting exertion to follow with the minimum of thought upon the receipt of an immediate sense-impression."[12] Mach asserts that "Physics is experience arranged in economical order."[13] The laws and concepts of physics, according to Mach, are economical in that they save the trouble of having direct experience of all cases of a phenomenon and because they unburden the memory. In Professor Burtt this pragmatic element appears in a slightly different form. He claims that science seeks regular relations in experience because such knowledge is valuable in the pursuit of any other end. "Why is the need which science seeks to meet more fundamental than any other? Because, in brief, the aim of science is to establish dependable knowledge of the relations of things, and such dependable

[12] *Ibid.*, p. 78.

[13] *Popular Scientific Lectures*, tr. by McCormick, p. 197.

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knowledge is needed in the effort to satisfy any other need."[14] "The ideal of science is to establish what is needed for the successful attainment of any other ideal."[15]

To the general pragmatic contention that scientific relevance is a mere matter of convenience or utility to the scientist or to man in general, I wish to object on the score that such a view would make science in its very basis subjective. I have shown that science seeks essentially to discover and formulate just what is relevant to what, and how it is relevant. But if all relevance is merely a matter of utility, then the scientist is telling us not about real things, but about his (or society's) purposes. I certainly believe it *is* useful to know just in what ways various factors depend upon others; but it is useful only in so far as it is *so*—the usefulness does not create, but rather presupposes, the dependence. "The economic efficiency of scientific knowledge is based on something in the facts."[16] Shorthand is very useful and economical *if* there is something to be said; otherwise it is merely an odd pastime for people who haven't much to do. If some factors were not *really* much more important than others, science could not summarize experience; it could only give excerpts from it. And the contention that all relevance is relevance for some purpose is false unless one such purpose is simply to discover what factors are really relevant to any given one. Selection of means for a purpose itself presupposes that the real world is so constituted that only certain factors are relevant to a proposed end; and though what particular end we seek may be determined wholly by us, once we have chosen a definite end, the relevance of proposed means is determined by the nature of the objectively real world.

I hold that traditional mechanics is correct in claiming that the principle of relevance has ontological validity; what is relevant to what is not a mere matter of convenience. But I hold with the positivists that the relevant has no peculiar right to preëmpt reality or existence to itself. I contend that the prosaic and common-sense view, to the effect that the real world is neither thoroughly relevant nor thoroughly irrelevant throughout, but that some factors in relation to a given one are much more relevant than others, is a correct view. I hold the astonishingly conservative opinion that science does try to tell us about real things, and that if anything whatever which it tells us is true, then, since everything it says is abstract, we must admit that real things themselves possess unessential, irrelevant characteristics.

More particularly, I believe that a real thing or existent is

[14] *Religion in an Age of Science*, p. 24.
[15] *Ibid.*, p. 48.
[16] *Reason and Nature*, p. 153.

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simply the unique togetherness of all its characteristics or attributes. But some of these characteristics belong to it merely as a matter of fact; they are not part of, nor implied by, its essential nature. They are irrelevant but actual characteristics of the thing; the thing would be just *what* it is were they different, and hence, though they are predicable of the thing, the thing is independent of them.[17] For example, Galileo's pendulum did have the relational property of being in motion at a particular time in a particular place, but this was a mere detail. Galileo could rightly disregard such properties as irrelevant (though he could not properly deny their existence) in stating such an essential characteristic as the following, that the period of oscillation of the pendulum was invariant despite variations in the amplitude of the arc described. Every existent thing has hosts of characteristics which are included in it as existent, but can be properly disregarded when we are concerned with *what* it is that exists. Science is concerned with essential natures, focal characteristics, not indiscriminately with every matter of fact.

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## A FUNDAMENTAL DIFFERENCE BETWEEN THE NATURAL AND SOCIAL SCIENCES[1]

IT is to be expected that during the early stages of the development of the social sciences there should be many varied and conflicting beliefs about the relation between them and the natural sciences. At one extreme are those who believe that no science of anything social is possible or even desirable, those to whom the prospect of analysis and all of the rest which goes with scientific inquiry is essentially repugnant. At the other we find those who delight in exactness and rigorous formulation, but who find nothing distinctive in the social and who hope to achieve its reduction to the physical. To these materialists, who hold that the social is only the physical in disguise, there is no *special* problem of the relation of these two great classes of science: for to them the question of the relation of the social to the natural is just one aspect of the more general question of the relation of non-physical appearance to physical reality. In this discussion I mean to avoid both of these extremes: taking it as obvious that there are organized bodies of

[17] For a further exposition of my point of view, see "Focalized Identity," to appear soon in *The Monist*.

[1] Read, with minor omissions, at the Thirtieth Annual Meeting of the American Philosophical Association, Eastern Division, Charlottesville, Va., December 28, 29, and 30, 1930.

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knowledge whose subject-matter is the social and which deserve the name of science, and, against the extreme materialism, pointing to the fact that as yet the social sciences have not been shown to be derivable logically from the natural.

However, within this middle position there is little agreement. In the first place, we are not sure whether all the studies dealing with social phenomena exhibit enough of the characteristics of science to be fairly called sciences; for example, the questions, "Is history a science?" and "Are the historians trying to find the laws of historical events?" have no answers that may be called the settled opinion of students within the field, and, consequently, there may be said to be no agreement whether history possesses even the aim of science, or whether, granting perhaps that it has the aim, its achievements make it worthy of the title. Secondly, there is the controversy about the status of values in reference to the social sciences: we have those who believe that the progress of the social sciences rests upon the possibility of the complete exclusion of all consideration of value, and those who believe that value is part of the proper domain of these sciences. Thirdly, there is the great difference of opinion about the kind of methods to be employed. The mere volume of this controversy led to Poincaré's devastating remark that, while the physicists are concerned almost wholly with results, the sociologists are concerned almost wholly with methods. Other great issues might be mentioned, but it seems as if the more one surveys the field the more he is apt to come to the conclusion that every possible combination of belief has its representative, and no combination more than one.

No one would deny the importance of these issues, nor that their solution is necessary for the progress of the social sciences and of philosophy. We should come to some conclusion about the boundaries of the social sciences, about the possibility of including elements of value in their data and in their generalizations, and about the methods that are proper or peculiar to them. Yet in face of the reigning chaos it may be well to begin afresh, to ask ourselves if there is not some simple distinction which has been neglected, which is significant enough to be worthy of statement, and relevant enough to those more prominent issues to give some promise of helping us toward their solution.

My thesis is that this simple relation is to be found in the kind of law or theory peculiar to each kind of science: that the complete formulation of any true proposition from social science always includes as part of itself some reference to the content and extent of some definite belief, while the complete formulation of any true proposition from natural science never includes any such reference

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to belief. This distinction in kind of proposition may also be expressed as follows: assuming that a true proposition is the assertion that certain conditions are connected with certain other conditions, if the proposition is from social science one of the conditions is a belief, while if the proposition is from natural science none of the conditions is a belief. The exact form of the belief condition is "if persons 1, 2, 3, etc., believe *a, b, c,* etc." For each law of social science this form would have to be given a content; that is, what is believed, and who believes it would have to be stated as part of the law. Of course, this belief condition is meant to include the cases of disbelief and of absence of belief.

There are three main arguments in support of this distinction. The first is general and derived from the logical structure of any science. The second is more empirical and based upon actual cases. The third may appear as sophistry.

One of the general characteristics of a science is its internal organization. We commonly, and quite rightly, define a science as an organized body of knowledge, and this means that no one proposition stands alone, but rather that it is set in a context of other propositions and itself constitutes part of their context. This systematic structure of the fields of knowledge properly called sciences is very familiar and needs no emphasis. But I would simply point out that the context includes conditions under which alone any one of the propositions is true. Such conditions are strictly necessary. Usually in our rough and ready speech and thought, we forget about these necessary conditions, especially when the effects of their variation are negligible or when there is little likelihood that they may fail to hold in the expected course of events. Many illustrations might be cited to show the presence of these necessary conditions and our habitual omission of any reference to them, and one simple example will suffice. Is it true that water boils at two hundred and twelve degrees Fahrenheit? Yes, but only under the conditions of normal atmospheric pressure and under all the other conditions that only a physicist could state properly. Ordinarily we attach no qualifications at all to our answer, because great variations in pressure do not occur frequently, and the effect of slight variations is not important to us. Practically, what we do in this case we do in all: state only those necessary conditions which are liable to sometimes hold and to sometimes fail when the holding or failing makes a difference that is significant. But the complete formulation of any proposition would include them all.

This general argument does not show any difference between the natural and social sciences, but it does show where we should look to find the difference when we come to specific cases. Let us take

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several examples from economics. Here we find a curious phrase, often used, and all too vaguely used, to cover all the unstated and perhaps unknown conditions upon which the truth of any law depends, namely, the phrase, "other things being equal." Such a general qualification needs analysis. For instance, an increased supply leads to a decrease in price, other things being equal, and I hope to show that one of those other things is the belief of those whose activities are generalized into this law. If, as a buyer, I know that several different prices are being asked for a commodity, I will probably buy at the lowest. If I do not know this, there is no telling which of the prices I will pay, and the same applies to all buyers. And, if a seller knows that a competitor is asking less, or that he can not get rid of his supply at the current price, he will probably reduce his price too. Again, if the seller does not know that by lowering the price he will stimulate the demand, there is no telling what he will do. In fact, the connection between the two conditions which the law asserts is very far from being a mechanical connection, but is brought about by the knowledge possessed by the buyers and sellers. The complete formulation of the law would then include at least the following: "If the supply is increased, and if both buyers and sellers are aware of the situation thereby created, and if other things are equal, then prices decrease." It is obvious that we do not need to state this belief—or, if you prefer, knowledge—condition in connection with the law of supply because it holds true so regularly.

But let us take another case. Suppose that a statistical study results in the generalization that six months after a rise in the price of commodity *a* the price of commodity *b* will rise also, other things being equal. If this law becomes known to those concerned with the two commodities, there will be an increased demand for *b* and a decreased supply of *b* whenever the price of *a* advances, both due to the expectation of the increase predicted. This all results in an increased price for *b* now rather than six months from now. In other words, one of the conditions of the truth of the generalization was ignorance of the generalization itself, and the knowledge of it tends, not to make it false, but to make it inapplicable, because the condition under which it is true no longer holds. While in the former illustration it was unnecessary to state the belief condition because that condition is so uniformly satisfied, here it is necessary to state it because it is so likely to fail.

As a final but more telling illustration from economics, there may be cited the following fundamental proposition, or axiom, from a sketch of a deductive development of economics: "Man constantly seeks what he believes to be the greatest satisfaction of his wants and

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those of his family by the means which he thinks call for the least effort."[2] Here the belief conditions is stated explicitly.

A fourth case is from psychology. Suppose a man has an excessive fear of large crowds. The psychologist seeks to find the cause in some early experience. The generalization involved, while frequently not stated exactly, is "if an early experience of such and such kind, then excessive fear of large crowds." When that early experience is discovered it is explained to the patient, and sometimes he is cured. That can only mean that the presence of the cause and ignorance of the causal relation lead to the presence of the effect, while knowledge of the relation leads to absence of the effect despite the presence of the cause. More exactly, it means that the cause is not merely the early experience, but is rather that early experience and ignorance. A large number of the generalizations of psychology are of this sort and the belief condition must be included in them.

Again, let us take the generalizations of the "apostles of despair," such as Oswald Spengler and Joseph Wood Krutch, who predict the decline of our civilization. Certainly, our own historical perspective must be admitted as historically new. The civilizations they study were ignorant of all the results of modern historical research. Perhaps this ignorance is necessary for the truth of their generalizations. At any rate, there is no showing that it is irrelevant until we get a test case, i.e., until we discover a dead civilization that knew what we know, or until something decisive happens to our own. If ignorance be admitted as a necessary condition of the generalizations upon which their prediction is based, it then follows that those generalizations do not apply to the present situation simply because not all the conditions are fulfilled. Thus anyone who rejects the prediction on the ground that our knowledge of the generalizations is precisely the thing which alone may prevent our civilization from declining is admitting the presence of an unstated belief condition as an essential part of those generalizations.

The negative aspect of the thesis, that no belief condition is part of any law from natural science, is more easily illustrated. Certainly, the planets have followed their courses independently of any belief of ours about them or about anything else, and likewise the increase in the number of people who have come to believe in the laws of astronomy has had no effect upon the sequence of the position of the planets. Or to revert to a former example, we should not expect to find what anyone believes to have any effect upon the temperature at which water boils.

[2] Rueff, Jaques: *From the Physical to the Social Sciences*, p. 108 (quoting C. Colson: *Cours d'Economie Politique*, Vol. I).

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Paradoxical as it may appear, the social sciences are at once too much and too little dominated by the natural. Too much in that they, like the natural sciences, confine their generalizations to events which are independent of man's knowledge, and too little in that they have generally failed to follow the ideal of the natural sciences in including in their generalizations all necessary conditions. Certainly, the "classical" economics was based upon the acceptance of the Newtonian ideal, and one of the standard criticisms of those economic theories is that they are not applicable when men lack, among other things, knowledge of their own economic interests.[3] This criticism is the admission of a belief as a necessary condition for the generalizations of the classical economics.

This difference between the natural and the social sciences suggests that the processes of verification in the two are radically unlike. In the natural sciences the fact which verifies or disproves a generalization occurs independently of knowledge of the generalization (although, of course, the *use* of that fact as a *verification* is dependent upon knowing the generalization), while in the social sciences the occurrence of the fact is dependent upon the knowledge of the generalization. In other words, the process of verification in the social sciences is in part circular. A belief may give rise to the very kind of behavior which shows the belief to be true, or to the kind of behavior which shows the belief to be false, but in either case the verification or disproof is partly circular.

Let me guard against a possible misunderstanding. Undoubtedly, if anyone wished to explain how it was that men ever succeeded in arriving at any knowledge of astronomy, he would have to include in his explanation a statement of the dominating beliefs of the early astronomers. In other words, a belief condition is necessary in a proposition explaining how we have achieved a knowledge of natural laws. A proposition about natural law may contain a belief condition, but that is not the same thing as saying that the natural law itself contains a belief condition. One might expect any generalization covering the growth of our knowledge to contain a belief condition precisely because this growth of knowledge is a genuinely social phenomenon. The knowing may be dependent upon belief, but the natural laws which are known do not include beliefs.

There is another possible source of misunderstanding. We may apply our natural science, and thus by creating certain conditions cause their natural consequences to come into existence also. And it may be utterly impossible to explain such applications without reference to what men believe. But this application, again, is different from the natural science which is applied. In fact, it may

[3] Élie Halévy: *The Growth of Philosophic Radicalism*, Pt. I, Chs. I, III.

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be said that all of the applications of science, whether natural or social, are part of the domain of social science precisely because belief is involved in any explanation or generalization of those applications.

When we look at natural science in the large, we must admit that as a social movement it is dominated by two main motives, one something like curiosity, wonder, desire to know and to understand, and the other by the belief that "knowledge is power." This power is power to do, to achieve, to create. Is it not rather absurd, then, to carry from the natural sciences the conception of natural law which presupposes that we can formulate the laws of what men do and achieve and create without including in those laws any reference to their beliefs? The hope is that knowledge is a condition of doing, and then we study the doings as if knowledge were irrelevant. Our hope and our practice when we try to generalize in the social field without admitting any belief condition into our generalizations thus appear to be inconsistent. Either the hope should be abandoned, or the belief condition admitted as part of the laws of social science. And, if we choose not to abandon hope, it is practically necessary to state the belief condition in addition to merely admitting it whenever the effects of its variation are large and whenever there is any probability that it may in fact vary.

To establish adequately the distinction would require the analysis of a far larger number of examples than I have the time or ability to present, and, without doubt, some examples of propositions which appear to belong to social science could be offered in which it would be rather difficult, if not impossible, to find any belief condition. But here—and this is the argument that may appear as sophistry—it may be questioned whether such propositions really do belong to the social science field. If the distinction be granted, it must not be taken to mean that no part of natural science is relevant to or made use of by the social sciences, or to mean that none of the propositions which the social sciences use are from natural science. Physics uses mathematics without thereby becoming mathematics or mathematics thereby becoming physics, and likewise some natural science generalizations may have their greatest theoretical use in social science and still retain their status as essentially of the natural science type, although we should be misled, unless we exercise considerable care, into calling them social in kind. Thus, for example, a number of propositions of psychology, which is a social science, probably belong to biology, which is a natural science. We may be mistaken in what we class as social.

Nor does it greatly matter—and this is the second and last part of the sophistry—whether this distinction in kind of proposition is

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identical with the distinction, ordinarily made, whatever that may be, between the natural and the social. This is not an inquiry into the proper use of the term "social," but rather a plea for the recognition of the two types of proposition. Even if no two of us use the word "social" in precisely the same way, we can face precisely the same question whether there are these two main types of proposition.

The distinction, I hope, does not presuppose the adoption of any special metaphysical position. It is presented more as of methodological or ethical significance. If one can give a materialistic account of knowledge, then the social collapses ultimately into the natural, and, if one can give an idealistic account of reality, the collapse is in the other direction; if one holds that knowledge is only a specialized form of an omnipresent "taking account of," then the distinction is one of degree and not of kind.

The distinction has at least the merit of being fundamental. It is frequently stated that the social sciences differ from the natural in the greater difficulty of experiment, the non-recurrent character of their phenomena, the greater number of factors operating, the greater difficulty of determining the influence of each factor, etc. These distinctions are rather superficial, and good cases to the contrary can be cited for each one, e.g., certainly the inability to experiment upon meteorological phenomena does not mean that meteorology is a social science.

But the chief criticism of these usual distinctions is that they unfortunately suggest that whatever we can discover in the social field, once the difficulties are overcome, is in all other respects like what we find more easily in the natural field. Certainly our social progress has been delayed by the unwarranted inference that, since there are immutable laws of social phenomena, the social situation is as little modifiable as the natural. Recently there has been a growing recognition that perhaps the social situation is alterable, but this has unfortunately brought the counter suggestion that perhaps social laws are mutable. If mutable laws mean laws that are sometimes true and sometimes false, then such a social science would have need of astrologers and magicians to determine just when any given law is true and when false. We shall, on the other hand, continue to have immutable laws whenever those laws are properly stated, but the situation is alterable because a belief is part of a social law and a belief may change, not thereby rendering the law mutable, but making an immutable law inapplicable and making one immutable yield application to another equally immutable. "Economic laws do not disappear, but their application to economic situations is continually changing, as the physical factors that seemed to give them immutability are found modifiable in their economic bearing

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by psychical factors which carry a creative spirit."[4] State the necessary belief conditions of social laws and those laws become more scientific in character and at the same time suggest the possibility rather than the impossibility of modifying the social situation.

This simple distinction is relevant to at least one of the more prominent issues mentioned at the beginning, and I shall merely suggest in what way. It gives a locus for the introduction of values into the data and generalizations of social science. While the belief condition disclosed in the examples was always one of knowledge or ignorance of some facts or generalizations, the belief condition need not be so limited, and a belief in the form of a hope, an aspiration, or a simple judgment of value would be necessary to some generalizations. Value may enter a generalization without thereby destroying its scientific character, provided it enter as the content of a belief of definite extent.

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## THE PRINCIPLES OF SYMBOLIC LOGIC

I WELCOME Dr. Ushenko's Note on the meaning of propositions in this Journal (Vol. XXVIII, p. 715). In it he seems to me to have done a much needed and quite original thing. Alone of the believers in the "modern" (that is, symbolic) branch of Formal Logic, he has attempted to defend it against the criticism directed against it, for the past thirty years, by pragmatic logicians. Until he wrote, I had feared that they were wholly absorbed in multiplying, and trying to understand, their own symbols, or that they were pursuing a Brer Rabbit policy as the only safe way of dealing with unanswerable objections. So Dr. Ushenko's effort deserves a hearty welcome—though a page and a half hardly seem to me worthy either of the dignity of the subject or of the gravity of the situation.

It is to be regretted also that he should have spent so much of his scanty space on psychological speculation about the probabilities of my death-bed repentance and conversion to what he regards as logical orthodoxy, and on restating so many of my objections to symbolism, as if they were objections to me; but all this does not cancel his transcendent merit, which is sensitiveness to the criticism of which symbolic logic stands in such need.

To foment this salutary process further, I will set forth briefly (and therefore dogmatically) the points I made in my *Personalist* article on "The Sacrifice of Barbara," before proceeding to consider

[4] J. A. Hobson: *Economics and Ethics*, p. 125.

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Dr. Ushenko's defence: for my state of mind I will refer him merely to the fuller article in the January (1932) number of *Mind.*

I believed myself to have brought *nine* vital accusations against symbolic logic. I pointed out (1) that logic could not be treated as a science of pure form, because, if form could be got pure, it would be merely verbal, (2) that the notion of *validity* is in no wise a substitute for *truth,* (3) that "truth" in symbolic logic suffers from a systematic ambiguity, because the "truth" of judgments is so different from that of propositions, (4) that symbolic logic has no means of distinguishing truth from falsity *by their form,* nor (5) any means of determining the *meaning* of its propositions, and that it is idle to discuss truth until meaning has been ascertained; (6) that, moreover, it can not distinguish between plurality of senses and real ambiguity, and that in consequence its "propositions" become infinitely ambiguous (potentially); (7) that they are not *propositions* at all, but *propositional functions,* and indeed (8) that *propositions* are the fundamental figments of symbolic logic, and do not exist at all, while (9) a symbolic logic that really confined itself to pure form would have no content left whatever.

Of these nine points Dr. Ushenko has taken up only the sixth, and that apart from its connection with the fifth, and the seventh. The cure he prescribes for the constant variation in the meaning of the same verbal form in its various uses is a "logical convention" to take "the minimum meaning of all meanings which are associated with the given sentence." He admits that it may be difficult to determine this, but infers only that "it will sometimes remain an ideal." But surely if he would allow for the development of meanings by *future* use, he would not imagine that the meanings can ever all be predicted and summed. Hence his minimum meaning would dwindle to zero, and become *impossible* to determine. In any case, however, to multiply its conventions and fictions seems a curious cure for the defects of symbolic logic, and I fail to see either how "this ideal is logically important" or is an aid to "precision of thinking."

On the other hand it is part of *my* case that "a proposition being inanimate is not subject to growth"; that is just the trouble about it! For our actual thinking *does* grow; so vigorously indeed that, strictly speaking, *any* significant predication (when successful) always changes the meaning of the terms it employs.[1] But Formal Logic has perversely chosen to build on the fiction that the meaning of terms is (or ought to be) *fixed,* and to talk about propositions rather than judgments. So the proposition becomes a helpless formula, totally incapable of reproducing the features of living thought. It has acquired its meanings from *past* uses; but these do not protect

[1] Cf. *Logic for Use,* p. 205.

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it against "willful modifications" at the hands of masters of language like Humpty Dumpty, who make words mean what they please. Is not the whole history of philosophy one long illustration of philosophic audacity in manipulating language, and does not experience show that philosophers frequently get away with their arbitrary modifications of "*the*" meaning of words and "propositions"? I can not admit, therefore, that Dr. Ushenko has succeeded in making symbolic logic in any way relevant to the procedures of our actual thinking.

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## BOOK REVIEWS

*The Platonic Tradition in Anglo-Saxon Philosophy: Studies in the History of Idealism in England and America.* JOHN H. MUIRHEAD. New York: The Macmillan Company. 1931. 446 pp.

This book is both a valuable addition to *The Library of Philosophy* and a great disappointment.

That it is a valuable addition to the library for which its author has served as editor will be anticipated by all who are familiar with Professor Muirhead's long, intimate, and sympathetic acquaintance with philosophical traditions on both sides of the Atlantic. The *Studies* here presented, as the author himself recognizes, "make no pretence of being a history of English and American idealism" (p. 15). Some readers will regret that, in spite of Professor Muirhead's recent volume on Coleridge, no chapter in this new book sums up the author's wide knowledge of Coleridge in a treatment proportional to that devoted, for example, to Arthur Collier or Carlyle. Likewise Berkeley, though referred to abundantly, is given no systematic discussion. And other important names receive only incidental reference. But the studies which Professor Muirhead does offer are competently and urbanely done. From the period prior to the nineteenth century Cudworth, Norris, and Collier are chosen for treatment. Of nine chapters on nineteenth-century idealism in England and eight chapters on idealism in America, five are in each case given to tracing the development of Bradley and Royce respectively. More interest attaches, however, to some other chapters reprinted from *Mind* and the *Philosophical Review*, partly because the subject-matter is more fresh, partly because here Professor Muirhead writes with the ardor of a pioneer. "How Hegel Came to England" and "Hegelianism in America" are two such chapters. So is the chapter on Pierce which speaks of the identification of his philosophy with pragmatism as a "misapprehension" (p. 328) and

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maintains that antagonism to Cartesianism led him to reach independently what was almost an Hegelian position; for though there is evidence that Professor Muirhead "misapprehends" pragmatism (at least Dewey's type of pragmatism), he at least makes apparent some frequently overlooked elements in Pierce's thought.

To call the book also a great disappointment may seem to betray a whim of the reviewer rather than a lack in the book. Actually the disappointment is objectively justified because the book utterly fails to fulfil the promise of its title. The title should have been what is its sub-title; for the book is a series of studies in idealism. The book throws no light whatever on questions which the title would lead any student of philosophy or literature to expect to find analyzed with care. For example, there are, as is well-known, many Platonic elements in Cudworth; but a systematic presentation of Cudworth, even when an estimate is added of the extent to which Cudworth grasped "what must always be the central point in a sound idealism" (p. 60), makes little contribution to our knowledge of the rôle of Platonism in seventeenth-century England. Professor Muirhead has only done some of the preliminary groundwork necessary to a proper treatment of the theme his title announces. He does not tell us what Cudworth knew of Plato, in what form and through what other writers (e.g. Plotinus and St. Augustine) his knowledge of Plato came to him, what Cudworth thought Platonism to be and why he thought so, what problems drove him to Platonic positions, what happened to Platonism when Cudworth utilized it, in conjunction with other elements elsewhere derived, for his attack on Hobbes, what form Platonism consequently took in Cudworth's philosophy, and what effects Cudworth's form of Platonism had on the course of so-called Platonic traditions in Anglo-Saxon philosophy. Some material towards an answering of some of these questions Professor Muirhead gives because he knows and summarizes Cudworth's philosophy; but a treatment of these questions he can not be said to furnish. And so with the other idealists whose doctrines Professor Muirhead goes on to treat.

In his conclusion on "What is Dead and What is Alive in Idealism" Professor Muirhead sums up "the Platonic tradition" under five points. One can readily recall passages in Plato which Professor Muirhead could quote to defend this brief analysis of what Platonism means to him. One is left to wonder whether Platonism meant the same five points to Cudworth, Bradley, Royce, *et al.* But not merely are these five points overshadowed by the longer analysis to which Professor Muirhead at once proceeds of Neo-Kantian and Neo-Hegelian "developments" of Platonism. Also these points are given in a detached study that is not woven into the

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body of the book; they are given in what seems almost an afterthought. Professor Muirhead is amply justified and thoroughly sound in insisting in his preface that the treatment of British philosophy as a record of empiricism beginning in Bacon and Hobbes and Locke and continuing on to Mill and Spencer and Sidgwick is a partial and one-sided treatment of a much more rich and manifold complex of philosophical speculations; he has gone on to summarize some phases of British philosophy that are too often slighted. But without more analysis and criticism it is misleading to lable these phases the "Platonic tradition." Professor Muirhead quotes on his title page Professor Whitehead's remark that "the safest general characterisation of the European philosophical tradition is that it consists of a series of footnotes to Plato." The book that would measure the degree of truth in this amazingly hyperbolic judgment has yet to be written.

STERLING P. LAMPRECHT.

AMHERST COLLEGE.

*Du Cheminement de la Pensée.* EMILE MEYERSON. Paris: Félix Alcan. 1931. 3 vols. Pp. xxvii + 1036.

*La Philosophie de M. Meyerson.* M. GILLET. (Archives de Philosophie, vol. VIII, cahier iii.) Paris: Gabriel Beauchesne. 1931. Pp. 114.

That the interest in M. Meyerson's interpretation of science is growing finds evidence in the increasing number of articles about it. The latest addition to this list is M. Gillet's *La Philosophie de M. Meyerson,* which shows the harmony between the Meyersonian point and that of *la Théodicée catholique.* M. Gillet believes that the works of M. Meyerson fortify three familiar proofs for the existence of God, the proofs from contingency, degrees of perfection, and finalism.

M. Meyerson's own writings have, moreover, been increased this last summer by the addition of his lengthy and detailed interpretation of logic. Needless to say, this study has only strengthened the conclusions its author had already reached in his previous investigations.

It will be recalled that science, according to M. Meyerson, is not simply legalistic but also causalistic, and that when a causal relation between two events has been formulated, an identification has been made between the two events. His latest treatise shows how the process of identification functions in thinking itself. This is accomplished by tracing the progress of thought from the diversity and multiplicity of the data with which the thinker is presented to the identity and unity of the conclusion with which alone he is satisfied. Until an equation is reached, thought does not rest content and

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when—as is the case of the second law of thermodynamics—the facts resist identification, the thinker indulges in elaborate speculations to explain the facts away. Yet it is impossible to reach a true identity and the "irrational" always subsists as a fact even if, like a political minority, it receives no adequate intellectual representation.

It is certain that the tendency of modern logicians is to insist that their assertions are tautological. This means that they must be symbolized as equations and that whenever one side occurs in a proposition, the other can be substituted for it. Though M. Meyerson distinguishes in places between psychology and logic, logic is still for him "the art of thinking" and he denies its tautological character. Thus $2 + 2 = 4$—which of course is not pure logic but will serve as an illustration here—is not a simple identity, but an identification, because on one side of the equation is the symbol for an operation which is missing on the other. There is therefore *discovery* revealed in this assertion and discovery means new knowledge. Logic thus, for M. Meyerson, is more than a set of conventions for the use of certain symbols; it is a means of organizing the knowledge one has acquired from experience.

Thus he believes that the *a posteriori* element can never be eliminated from mathematics and gives (pp. 402 ff.) one of his characteristically brilliant examples of how even a formula containing an imaginary number as an exponent may be brought back to simple manipulations of pebbles as its source. At the same time—and in regard to the same example (p. 376)—he points out an instance of a mathematical discovery which seemed shocking to its contemporaries for the simple reason that there had as yet appeared no application of it to experience. It may seem strange that knowledge derived from experience and which always contains an *a posteriori* element should appear to be entirely *a priori* and inapplicable to experience. M. Meyerson does not clarify this mystery.

Part of the trouble seems to lie in a failure to distinguish between rules and their application, part in a failure to make precise exactly what "derived from experience" means. The particular school of logicians whom M. Meyerson is attacking would maintain that they are discussing the use of symbols and not their application to experience. Such a discussion should cause no such surprise as that voiced in a quotation from Mr. Hardy (p. 739, n. 64), that his belief that $2 + 2 = 4$ is not founded on the *Principia Mathematica* of Whitehead and Russell. Did Whitehead and Russell ever pretend that they were discussing the psychology of belief or the genesis of any individual's belief? One can not avoid Mr. Sheffer's logocentric predicament so easily, granting that one should try to avoid it.

As for the second question, an assertion may be "derived from

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experience" in a comprehensible sense of that expression without necessarily corresponding to experience. *Alice in Wonderland* contains nothing whose origin was not in experience, but very little in it is in correspondence with facts. One can build up concepts not only by extensive abstraction, but by simple abstraction, by generalization, by direct contradiction, by combinations according to *a priori* or *a posteriori* formulas of simple or complex data of experience. One has, to be sure, to grant men the ability to think. But epistemologists might be charitable enough to do that.

The limits of this review do not permit the detailed analysis which alone could do justice to these three thick volumes. One must be satisfied with indicating briefly the general tenor of their argument. They contain no page that is not a stimulus to further reflection or a challenge to prejudice and are a worthy companion to the really great works which have preceded them.

GEORGE BOAS.

THE JOHNS HOPKINS UNIVERSITY.

*Personality and Reason.* ROBERTA CRUTCHER. London: The Favil Press. 1931. ix + 178 pp.

Dr. Crutcher's primary interest is in practical psychology and in problems of personal and social adjustment. Her theoretical inquiry into the meaning of the term "personality" has been influenced in the main by the late Professor H. Wildon Carr, whose positions she combines with tenets of the personalistic tradition. Her principal contention is that personality, which is "the most real thing of which we have any experience," "does not refer to a collection of states, but to an active, organized whole." This organization is "spiritual in kind," and this activity "expresses itself in thinking and doing."

The alleged identification of all existence with personal existence by Bowne is rejected as non-evolutionary. With an appeal to Leibniz and to current popular conceptions of energy in physics, another restriction of the real world is substituted; namely, to the world of individual organisms. "The real world consists of active individuals and their activity"; matter, on the other hand, is "phenomenal." With recourse to the Bergsonian theory of "creative evolution" as against "mechanistic" views of evolution (in which the author includes the theory of emergent evolution), persons are declared to be latecomers in the universe, standing at the top of a hierarchy of living beings. This series of beings, it is conceded, does not necessarily imply a highest being; yet Dr. Crutcher favors, in view of the problem of reconciling infinite perfection with the limitations of personality, either a Trinitarian conception of God, rationalized in Hegelian fashion, or preferably a finite, striving God de-

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scribed as a personified *élan vital* and as the "living God" of the New Testament. Of personal immortality the author is perhaps a little more convinced than of a supreme person. She is all the more certain, however, of personal freedom, defining freedom of the will on the basis of self-consciousness and of the achievement of self-organization through the knowledge and use of values as standards of judgment.

The theoretical and the practical activities of persons are interpreted quite in the manner of Croce and utilized for a defense of the unity of personality. The coördination of these activities, moreover, is said to insure the freedom of the individual. Psychological classifications of traits of individuals are judged to be acceptable, provided they are brought into line with a "phenomenal" interpretation of the "spatial body" and with the twofold classification of activity as theoretical and practical, and provided they contribute to what Allport has called *A Study of the Undivided Person.* For personality, it is maintained, illustrates the "concrete universal" of Hegel, in embracing the three "moments" of universality, particularity, and individuality, though shorn of the all-inclusiveness of Hegel's Notion.

Thus the treatise, selecting for the most part such materials as reflect the interests of Professor Carr, endeavors to effect a synthesis of Leibnizian monadology, vitalism, neo-Hegelianism, and personalism, with a view to supplementing scientific psychology. It is none the less surprising, considering the thesis defended, that but one sentence is devoted to the views of William Stern and none to the views of Coe, the living Boston personalists, and others. The main opposition is to an absolute idealism of the Bradleyan type as well as to mechanism and naturalism. The theory as presented is based upon an obviously preferential definition of existence, with the consequence that sharp oppositions are set up between the static and the dynamic, the physical and the mental, scientific knowledge and personal values, etc., whereupon one contrary is deduced from the other as the "phenomenal" from the exclusively "real." Had the metaphysical honors been equally divided, it would seem that personal evaluations might have been given a different status without being wholly lost, and any felt need of reconciling the oppositions might have been met by raising the previous question concerning the nature of the oppositions themselves.

RICHARD HOPE.

UNIVERSITY OF PITTSBURGH.

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## JOURNALS AND NEW BOOKS

SCIENTIA. Vol. LII, N. CCXLV–9. Das Mathematische im Menschen: *M. Dehn.* The Origin of the Solar System. Part I: From the Chaldeans to Chamberlin and Moulton: *A. C. Gifford.* La seconde loi de la thermodynamique s'applique-t-elle à la matière vivante?: *V. Ružička.* Il concetto di materia e il materialismo indiano: *A. M. Pizzagalli.*

Archives de Philosophie. Vol. IX, Cahier II. Supplément Bibliographie, No. 2. Paris: Gabriel Beauchesne, 1932. 59 pp.

Brun, J. Lucien: Les Libertés Culturelles. Étude de Morale Sociale. (Archives de Philosophie, Vol. IX, Cahier II.) Paris: Gabriel Beauchesne. 1932. 134 pp.

Graff, Willem L.: Language and Languages. An Introduction to Linguistics. New York: D. Appleton & Co. 1932. xxiv + 487 pp. $4.00.

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## NOTES AND NEWS

We are glad to publish the following communication from Professor Anna Forbes Liddell, Florida State College for Women, with regard to the Cusanus Commission of the Heidelberg Academie der Wissenschaften:

If that important period in world history, the transition from Medievalism to the Renaissance, has seemed to lack a philosopher who expressed the change in the current of thought, whose theory preserved the old even as it issued into the new, it is not because the fifteenth century brought forth no great thinker, but because the writers of the histories of philosophy have failed to recognize and properly evaluate Nicholas of Cusa.

It seems scarcely credible that a philosopher of the first rank should have remained for nearly five hundred years neglected, and therefore it were not surprising if the revival of interest in the life and writings of the Cardinal which has taken place in Europe during the past fifteen years may have seemed to many as no more than the enthusiasm of a few specialists. But this interest has steadily increased, and with greater knowledge of his work has come a growing conviction of its importance.

The long neglect can be explained. Although Nicholas was an ardent and influential Churchman—Cardinal, Bishop, Papal Legate, —although both in his writings and in his official policy he strove constantly to promote the unity of the Church and was so staunch a supporter of Pope Eugene IV as to be called the Eugenian Hercules, there is much in his writings which to the orthodox of a later time must have appeared dangerous if not heretical. His insistance that since there is only one God and one truth, no religion can be alto-

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gether false even though some are inadequate, his effort to harmonize the Koran with Christian teachings rather than to refute it by counter arguments, and his purely intellectual interpretation of the resurrection, heaven, and hell, could not maintain the approval of the Church. Furthermore, in discussing creation and the nature of the physical universe Cusanus often utters statements more radical than those which brought Giordano Bruno to his death, more revolutionary than those which Copernicus discreetly withheld or Galileo was forced to recant. Many of these statements: that the earth and all heavenly bodies move but none describes the orbit of a perfect circle, that the earth is not the center of the universe, but only appears so to us because it is our focal point (any other point of reference would be the center for an observer stationed there), and others of like kind, have been so frequently restated during the intervening centuries and so thoroughly demonstrated scientifically that they have lost their novelty. Others, as, for instance, that the universe is finite but boundless, seem to belong to the scientific theories of our own day. Nor is this essentially modern spirit found only in a few scattered phrases; it pervades his whole thought. Had Cusanus lived a century later, his works, and probably his own person, had scarcely escaped the flames. That his writings were not put upon the Index may be because the Church was unwilling to bring opprobium upon her former champion, or perhaps only because the works were not sufficiently popular to be regarded as a menace to orthodox faith. In any case, their study was not encouraged, and the oblivion into which they sank was more effective than a prohibition of their use.

Some studies and translations of his various books have been made, but usually the work has been incomplete and inexact. Having only partial knowledge of his theory, or failing to see him in proper relation to his time, his commentators have usually overestimated particular aspects of his thought; many have regarded him as just one more pious mystic. Such errors were not unnatural. Cusanus is not easy to understand; his basic principle is the unity of opposites, the implication of all complex variety in the simple identity of one infinite truth. "This however surpasses our whole understanding, which lacks the power to combine contradictions in its own principle by the way of reason" (*De Docta Ignorantia*, Book I, Chap. 5). As the meeting ground of Medieval faith and logic with Renaissance humanism and the advancement of science, his own philosophy provides an excellent example of his theory. Often errors occurred through defects in the source material studied. His works were rare and inaccessible, and unfortunately the text was often so corrupt as to pervert the original meaning. A scholarly critical edition has long been needed, but the enormity of

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effort which such a work required seemed to delay its being undertaken.

Finally within these last few years the *Heidelberg Acadamie der Wissenschaften* assumed the task. The members of the Cusanus Commission of the Academy are: Ernst Hoffmann, Raymond Klibansky, Heinrich Liebmann, Friedrich Panzer, and Heinrich Rickert. Co-editors are, also, Ludwig Baur and Gerhard Kallen. The ultimate intention is to edit all of the works, but limitation of funds has necessitated limiting the edition for the present to the philosophical and political writings. These, in fourteen volumes, will be brought out between now and 1940, the five hundredth anniversary of the appearance of *De Docta Ignorantia.*

The actual labor of collecting materials has not been easy. The European Catalogue of Manuscripts is not complete, and in consequence it has often been necessary to take long journeys in order to examine manuscripts. With patient thoroughness of exact scholarship the various texts have been collected, identified, and collated. Besides providing a reliable latin text the new edition will be furnished with a double series of valuable notes; this will greatly facilitate the study of Cusanus in his proper historical relation. The first series traces his own source materials, not only verifying the citations which he actually made, but determining those places in which he, like many other Medieval writers, made use of an author without giving any reference to his source. These notes are of especial interest because Cusanus was not only learned in the teachings of the Scriptures and of the Fathers, he was one of the first German humanists and an enthusiastic collector of early manuscripts. There is evidence that he read both Hebrew and Greek. His knowledge of Plato was not derived merely through the Neo-Platonic tradition; he was acquainted with many of the Platonic Dialogues, especially the *Republic.* The second series of notes sets forth the most important instances in which Cusanus was cited in the works of later authors, thus affording specific evidence of his influence. It is noteworthy that the list includes the names of Bruno, Kepler, and da Vinci.

The first two volumes of the philosophical and political works are now ready: *De Docta Ignorantia,* edited by Ernest Hoffmann and Raymond Klibansky, and *Apologia Doctae Ignorantiae,* edited by Raymond Klibansky. Others to follow are: *De Coniecturis; De Filiatione Dei; De Genesi; Idiota de Sapientia* I & II, *De Mente, De Staticis Experimentis; De Visione Dei; De Pace Fidei; Cribratio Alchorani; De Ludo Globi; Compendium, De Possest; De Beryllo, De Dato Patris Luminum, De Quaerendo Deum; De Apice Theoriae; De Concordantia Catholica* (two volumes).[1]

[1] Felix Meiner, Verlagsbuchhandlung, Leipzig.

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**Psychological Monographs.**—Princeton, N. J.; Psychological Review Company.
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An annual bibliography of psychological literature.

**Archives of Psychology.**—Columbia University Post Office, New York.
Subscription $6.00. 500 pages per volume. Founded 1906. Edited by R. S. Woodworth.
Published without fixed dates, each number a single experimental study.

**Journal of Abnormal Psychology and Social Psychology.**—Eno Hall, Princeton, N. J.
Subscription $5.00; foreign $5.25. Acting Editor, Henry T. Moore.
Quarterly. 432 pages annually. Founded 1906. Abnormal and social.

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Subscription $3.00. 288 pages. Edited by Lightner Witmer. Founded 1907.
Without fixed dates (9 numbers). Orthogenics, psychology, hygiene.

**Journal of Educational Psychology.**—Baltimore; Warwick & York.
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Subscription $6.00. Founded 1916. Bi-monthly. Edited by Madison Bentley.

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Bi-monthly. Edited by Knight Dunlap and Robert M. Yerkes.

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# THE JOURNAL OF PHILOSOPHY

## REASON AS FACT AND AS FETICH. (I)

NOBODY but a formal logician believes that the effective meaning of a word can be discerned in other words which a dictionary might employ to define it. Current usage presents only today's phase of a social event, an event whose remote beginnings reach back to a dim past and whose terminations are uncertain. What a word denotes no more sets forth its meaning than a man's vocation reveals his personality. All the significances which are the words' past, all the influences from their origins, their conditions, their development, flow together and interweave at its denotation. They suffuse it with meanings which work upon the mind without appearing to the consciousness, imparting to it their peculiar emotional tone, their bouquet and flavor, and thereby make it glamorous or hateful or indifferent. In this feeling-tone which every word possesses, the flow and variety of meanings it used to carry are condensed into a single and not always harmonious sentiment. Their inter-relations and places within the sentiment compose the fullness of a word's possible import when the user takes it up to express his own particular thought. That thought determines the word's final significance. Itself an event in an individual history, it consists of the thinker's specific response to his symbol and to the situation which stimulates him to employ it; and it culminates in a pattern of posture and vocalization wherein the thinker's spoken or unspoken pitch, accent, tempo, tonality, often are more important as instruments of communication than the verbal form itself. For it is they, and not the form, that delimit the place of the word in his stream of thought.

Hence it comes that no two minds can mean quite the same thing by the same term. Their meanings involve irreducible surds. They can touch. They can bump together. They can overlap. But they can not coincide. The common edges of their intent extend into aggregates of unique intentions whose variety is never reduced to a common denominator. These intentions may interfuse, but as in a melody, where the separateness and sequence of tones constitutes the interfusion and unity of the melodic phrase. In the total meaning of a term, the successive significations both retain their identity and lose it.



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These traits stand out in the persistent symbols of psychology and philosophy—in such expressions as *matter, mind, life, experience, will, the unconscious, reason,* etc. One need not stress how each of these terms figures in different systems with diverse and ultimately incommensurable meanings, according to the state of culture and the ruling passions of the places and the times of its use. Or how the tradition (which mixes each particular diversity into the others as the present moment of a man's life is mixed into all of his past experiences) absorbs from each of them an increment that carries over to the next generation. Thus, men of any time later than the bronze age of our western culture can, in using these words, mean by them neither unequivocally identical things nor irreducibly different ones. The full present meaning is a complex of meanings from which the generations make selections according to the time and place and circumstances of their utterance.

2. With this in mind, let us consider the meanings of the words "logic," "intellect," "intelligence," "reason," "rationality," and their derivatives. The words of this group belong together in the sense that they apply to a common field of human experience. They point to the same objects and activities, they name the same instrumentalities and techniques, and their meanings tend to hold the same status in the aggregate of human functions. On the whole, they came late in the life of language. This means that the activities which they name entered the field of conscious attention and became material for conscious control perhaps a very long time after they had taken shape as significant vital functions. It is a matter of curious interest that up to the fifth century before the Christian era neither the near nor the far Eastern peoples had made up discriminative names for them; and that these appear in the speech of only one western people—the Greeks. And among the Greeks, the primary meanings of the word for Reason is not a spiritual faculty, invisible and immaterial, but merely audible, tangible, verbal sound, speech. "By thinking," Plato makes Socrates say in the *Theaetetus,* "I mean the conversation which the soul holds with herself when considering anything. I speak of what I hardly know; but the soul when thinking appears to be just talking—asking questions of herself and answering them, affirming and denying them." In other words, Reason is *Logos,* the word.

The realization of speech, of the Word and its power, must have been as momentous a prehistoric experience as the discovery of paternity. How much primitive behavior centers around the avoidance, the secreting or the sacred uses of certain words, is anthropological commonplace. Saying can be even more potent than doing, as anybody knows who has been brought up in the Christian

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tradition and is acquainted with the Holy Bible. Indeed, to the primitive mind anywhere, the word itself as such is a force beneficent or malevolent, capable of accomplishing anything—natural or supernatural; it believes that the master of the right word is the master over the causes of events and the ruler over good and evil. This belief contains nothing fanciful or extraneous to experience. It is a summary of empirical observation. Heard sounds are followed by events; shall they not be the causes of events? They are, in the conduct of men and women; why not in the behavior of the sun, the moon, the planets, and the changes and cycles of the earth? Rituals develop of invocation and exorcism, blessing and cursing. They are operated as mechanisms of control, calling for extreme precision and refinement of use, the slightest error vitiating the effect. In the course of time sophistication steps in. The efficiency is transferred from the word itself, which anybody may use, to a particular speaker specially trained, and from the visible speaker to an invisible faculty, that becomes a mental power. Logos, which began as speech, has been transformed into *the logos* which is the Pure Reason, using speech.

3. This level had been the convention of the Greece to which the enlightenment came. What is this enlightenment, if not an eager concern about the meanings and effects of words? What else is it that the Sophists and Socrates and Plato and Euripides *add* to the folkways, to the beliefs and practices of fifth-century Athens? Shaken out of the comfortable customs of the ancestors by foreign invasion during a great war, brought thereby into responsive contact with a wide and variegated world, the Athenians of the days of Pericles found themselves endeavoring after a new social pattern which they called democracy. And what else could the tool of such a democracy be but the spoken word? To speak well was indispensable to success in public life, and a life not public could not be good. All ambitious young men of family were eager to learn the art of using words—oratory, the art of persuasion.

And the result: the greater proportion of what went for science and philosophy in those days was preoccupied with words and their relations. Those became the standard material of learning and have remained so till this day. The Athenian *sophist* was followed by the Roman *rhetor,* the Roman *rhetor* by the medieval master of arts and *doctor,* but the essential discipline was ever a discipline of words—whether as grammar or as rhetoric or as metaphysics or as logic. λογικη is of speech first, and then of "reason," and also remains ambiguously of both to the present day.

For it is easy enough to exhibit the color when we say *red,* and the thing when we say *chair* or *table;* but all that is substantially

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present when we speak of the *ens rationis* or *universal* is the verbal pattern itself and a sentiment or attitude responsive to its place in a verbal and social context. The distinction which obtains today between these verbal disciplines was not there in the beginning; it is an eventual distinction generated because men responded to words, which are actually symbols of feelings and things, as autonomous powers, and as if the grammatical relationships preceded the manifold experiences of the daily life instead of being occasioned by them.

So the ancestral ghost about whose placation and control Greek religion largely centered, becomes displaced by the governing reason of Plato's Otherworld of ideas (their alter egos are words) and this by the νους ποιητικος, the creative intelligence of Aristotle's psychology and metaphysics. That Otherworld of Plato's is Olympus and the Elysian Fields deprived of their local geography and dramatic story, stripped down to the bare verbal system and the feelings it arouses. The kosmos of Aristotelian metaphysics still further disincarnates that Otherworld. The grammarian's differentiations between parts of speech are projected upon the field of non-verbal experience as its definitive structure. They are established as the metaphysics of matter, form, substance, accident, and their relations; while the ancestral ghost of Greek religion gets changed over into the immortal Reason which has no organ in the human body. Aristotle can find no bodily part for this νους ποιητικος to work from because the forms or universals it is presumed to occupy itself with seem to go with words, but with nothing else that the senses can grasp. For this reason the phonations are declared to stand for beings invariable, immaterial, impersonal, invisible, intangible, out of place and out of time. Why, under such conditions, there can be a word for them at all is a mystery which solves itself as soon as one realizes that the word and its correlative attitude are all there is, that there isn't any more.

So the transvaluation of the word culminates. Beginning in God-knows-what dark and accidental lallation of an animal organism struggling to live at the risk of its life, the word operates on that organism and on its relations to its fellows and to the surrounding world in such a manner as to heighten and intensify its changing away from the animal into the human. The function of the word as communication gets shaped over into an immortal power alone capable of dealing with an unseen world of universals, an eternal creative Logos. And this eternal creative Logos is but the projection of the empirical experience of the action of words upon the residual universe. It is the last place of felt effect, glorified into a first cause. Made flesh again and dwelling on earth, this Logos saves man from sin and separateness, as the neo-Platonic systems tell and

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the Christian ones repeat, completing the circle. For all the ages of antiquity Reason stays the chief glory of man, the one differentia wherein is established his not being as one of the beasts. The whole movement involves the hypostasis of an instrument, the idolization of a tool, through dealing with a workaday function honorifically, so establishing it as a metaphysical faculty with magical powers.

4. Because the apprehension of "universals" is a mystery. It is an activity described by analogy with hearing and seeing, but a hearing and seeing of that which can be audible to no ear and visible to no eye; and which is therefore called intelligible! Kant's "intelligible world" is a world beyond all sense, a world sweeter still of entities unseen and unheard. Yet communication concerning it is impossible without spoken or written signs which must be heard and seen if such entities as "the categories of the understanding" are to be apprehended even in soliloquy. This is the world of the "pure reason," the world of "logic." It is this world which remains a chief preoccupation of the philosophic tradition. Its fundamental rule was formulated by Aristotle in the so-called "Laws of Thought"; the law of identity: *whatever is, is;* the law of contradiction: *nothing can both be and not be;* the law of excluded middle: *everything must either be or not be.* From Aristotle's day to this, the art of thinking, the exercise of reason, has been prevailingly regarded as conformity to these laws of thought. All the canons and devices of formal logic have been developed as techniques to ensure this conformity and to detect violations. Experiences of belief, invention, discovery, or imagination, leading to new knowledge and insight into the external world, have been either disregarded or denied validity or belittled as "mere psychology"; where these deprecating efforts failed to prevail, the experiences have been translated into "correct" logical form.

During the Middle Ages, the "ages of faith," the prestige of logical form was particularly great, and formal logic underwent signal development. This arose from the exigencies of the Faith itself. For the dogmas of salvation did not have their origin in the experience of the daily life, and such an origin would have been denied them as blasphemous if it had been attributed to them. The dogmas of salvation came as a revelation from "the intelligible world" and as a revelation directly antagonistic to the courses of nature and the experiences of the daily life; so much so, that the antagonism was offered as the ground for faith in the dogmas: *credo, quia asurdum.* But since these dogmas were descended to a scene with which they were by definition not at peace, they had to struggle to prevail. In this struggle they were aided by two champions. The first was material force, which shattered or extirpated

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opposition from proponents of alternative revelations. The second was logical prowess which disciplined what was known of the philosophic tradition to the uses of religion. Philosophy was retained as the handmaid to theology. Plato was apprenticed to the prophets and Aristotle made serf to revelation. To do this called for an elaboration of verbal subtleties, a concern with the forms and devices of disputation which contributed much to advance the art of "strict and rigorous thinking," or logic.

The dynamic of this process did not, of course, lie in the momentousness of the debated issues. It lay in the war for power and privilege between church and empire and between different orders and societies—like the Dominicans and Franciscans—within the church. Realists, nominalists, and conceptualists were driven by quite another concern than the existence of "universals" and the relative position of these sectarians at any given time was a fair barometer of the preponderance of power and influence of church or state, or lack of them in both.

Medieval philosophy presents, in fact, a comprehensive rationalization of the pretensions of various major institutions of medieval life. The need to rationalize was the mother of the characteristic logical elaboration, the creation and extension of far-flung "universes of discourse." In actual use, Reason was synonymous with the skill in employing verbal patterns to maintain a doctrine and to overthrow its competitors. Theologically and metaphysically Reason was a faculty conversant with universals in their eternal and necessary relations. It worked by means of the syllogism, an instrument than which none could be more strict, rigorous, precise. . . .

5. The Renaissance revulsion against the whole medieval view of life struck especially hard at the scholastic techniques. They became objects of derision even more than of refutation. All their ways and works became examples of irrationality and futility. Reason took on a new meaning. Not all at once. Not consistently with reference to any single field. But here a little and there a little, until an intention took form, acquired momentum and drive. To the degree that the men of the Renaissance carried over the interests of the Middle Ages, they tended also to repeat the techniques. The Florentine neo-Platonists may express a different spirit, but they do not use a different dialectic from Peter the Lombard or Thomas Aquinas or Duns Scotus.

The new spirit in the field of thought is an effulgence from new interests involving new activities conditioned on new objects. Gone is the day of *entia rationis,* the "intelligible world" of universals, projected from the ecclesiastical and political establishments. The city-dweller, the craftsman and trader, has emerged from his long

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obscuration. His materials, his tools, are solid and tangible stuffs, obviously occupying space, and moving or being moved through it. His craft, his manipulative habits and skill, is a series of measured applications of tools to materials, taking time and distributed in space. His labor consists of events in characteristic sequences that are tangibly comparable with one another. What he does has the same concreteness and force as what Columbus does taking his voyage, or as what Galileo does watching the lamp of the Duomo swing and counting his pulse the while. They are commensurate but neither the one nor the others' actions are commensurate with what St. Thomas and Duns Scotus do, disputing over universals. Here is a new field of action then, the field of everyday actualities. It is apprehended directly. It is empirically and directly subject to analysis. It is indefinitely extensible. The relations between its parts are not imputed; they are felt, directly experienced relations, the relations of space, of material force, and in a cruder, rougher way, of time. How can the term "Reason" fail to be suffused with these qualities, and at last defined by their dynamic?

Of course, it can not. By the end of the seventeenth century rigorous thinking has ceased to be syllogistic and has become mathematical. The Reason or intellect becomes identified with the entertainment of "clear and distinct ideas," and the notion of "clear and distinct ideas" derives from the experienced process of the *zerlegung* of space in terms of felt relations between the parts of it. Who are the makers of the new Reason, the new logical technique? They are students of the properties of space. They are Descartes and his followers, like Spinoza. The latter, in fact, envisages the entire structure of his infinite universe in spatial terms and demonstrates Nature and Man *more geometrico.*

This is not all, however. The daily life of the craftsman and the trader is involved in sequences of reciprocal pushes and pulls. Buying and selling, making and shaping, call for weighing, measuring, timing. Hourglasses and measures had existed also in the Middle Ages, but had received no attention from the higher-ups. The Renaissance came in with the clock. The mechanisms of weighing, measuring, and timing became significant foci of attention, for the skilled city craftsmen depended on them more and more to establish equivalences in production and in exchange. They held these equivalences to a moral signification in the expression "just price." "Just price" names a measure not greater and not less than the worth of the object paid for. It is analogous to the mechanical symmetry of the true balance of a pair of scales. It is more easily stated in terms of equal, undifferentiated counters; that is, in mathematical, than in other terms. Structurally it is an equation. Dy-

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namically it is the equality and opposition of action and reaction, of cause and effect, so that there can be no more and no less in the one than in the other. Esthetically, it is the firmness, the reliability of symmetry. Quantity emerges in terms of symmetry and balance. Symmetry and balance present a dynamic stability in terms of quantity. The circle is closed. Certainty gets a new ground and character. As Kepler says: "Nothing can be completely known except quantities or by quantities." This way of knowing becomes identified with Reason.

6. During the eighteenth century the feeling for this meaning of Reason was so strong that it permeated all the activities of the intellectual classes. The universe was described as a perfectly balanced system of forces in which there was a place for everything and everything was in its place. Parts were conceived as being adjusted to one another like cogs in a machine, influencing each other reciprocally as opposite and equal actions and reactions. Newton spoke of the cosmic processes in terms of clocks; Leibnitz expressed the same notion in the formula of "pre-established harmony." The mechanics of reciprocity and symmetry permeated literature and all the arts. Works as contrasted as Pope's *Essay on Man* and La Mettrie's *L'Homme Machine* were alike repetitions of the idea. And the idea was identified with Reason. This Reason was used as the touchstone of everything else, every event and imagining. The period was called the Age of Reason; it is, however, a Reason not in the pattern of Aristotle but the pattern of Newton, a mechanical equilibrium, part balancing part.

This view, as it happened, suited the gentlemen of England. It made the moral inequities of the social structure of which they were the privileged beneficiaries coincident with the mechanical equilibrium in which they were the supremely weighted apices. It never occurred to the wits and whigs whose discourse provided the light of this age of the enlightenment that such a balance was circular and that top and bottom might change places. Mandeville never dreamed of such a possible revolution in his beehive, with a change of rôles between drones and workers. Since, in mechanics, whatever is, must be; it follows in morals, as Pope sang, that whatever is, is right. Mechanism is morality, morality mechanism. Reason is the recognition of the ineluctable nature of things; the application to all experience of the mechanical equation which defines the structure of life, as a sequence of cause, effect, cause, effect, cause. . . .

7. Reaction against this attitude and method set in almost coincidentally with its coming of age. And the system itself was used to prove by strict and rigorous logic, the opposite moral. If Nature is a Newtonian mechanism of eternal wheels of cause and effect going

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round and round, no cog in any wheel is better or worse than any other, no unit in any equilibration is of greater weight than any other. Why then the distinctions of station and privilege, of opportunity and power which deform society? They are false to Nature, contrary to Reason. Away with them. Let Nature have full sway. Take the monkeywrench out of the works. Liberate the natural man. Energize his natural rights. Let opportunities be equal. Let each be free to help himself toward the realization of his own happiness, to enter without let or hindrance into the dynamic equilibrium of a natural society in a natural world under natural law. So the American Declaration of Independence might be paraphrased; so the French Bill of Rights. Both are rationalizations of programs of rebellion, not descriptions of things as they are. Both are formulated at the dictates of Pure Reason precisely because at the same dictates and on the same evidence a rule of acquiescence and submission had been imposed before. But now Pure Reason was a technique of revolution, and, indeed, during a phase of the Revolution in France was symbolized in a living woman and worshipped.

It has been said that the avowed faith in Reason declined because of the spread of literacy, because popular education antagonizes the "prolonged discipline" necessary for the proper exercise of reason. I do not think that the record sustains this opinion. It might as well be said that popular education antagonizes the prolonged discipline necessary for the proper exercise of virtuosity on the piano, or acrobatics or prizefighting. Men who were supreme masters of this art of reasoning themselves challenged the competency of Pure Reason to pretend to the supreme rule of life. One need only recall the works of David Hume and Immanuel Kant. It is not for nothing that the *Critique of Pure Reason* is a response to the *Treatise of Human Nature,* and that this response is reverenced by the philosophic generality as a momentous event in the history of western culture. In fact the work did not, as was said of it, remove Reason to make room for Faith; it revalued Reason. It demoted Reason from the status of insight into the eternal and universal nature of things which it had enjoyed from its invention by Plato and improvement by Aristotle till Kant's own day. In compensation it set Reason up as an inward function of the human psyche, merely reflexive, but autonomous and self-sufficient. To know what reality is when it is not known was denied to Reason; but in place of this power it was endowed with the gift of infallible prediction, of making "synthetic judgments *a priori*" since all its reference was internal to itself and all argument had necessarily therefore to be what the syllogism in fact is, argument in a circle. For how can

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more come out of a logical deduction than goes into it? Individuality, novelty, discovery, are by definition beyond Reason; all it can do is to argue a foregone conclusion. The premise it argues from, even its own nature, it must take on faith, take from the spontaneities of feeling and doing which do cross the bewitched abyss between subject and object to realities beyond.

8. What is known as the Romantic Movement consists in an elaborate verbalization of the sentiment defined by this point of view. The premise of the Romantics imposes upon them, whatever be their mood and characteristic, the task of somehow bringing together that God and Caesar whom the Kantian critiques have separated—either Caesar-God or God-Caesar. They do this by assimilating the external world to some phase of the psyche of man. One may prefer, like Fichte or Schopenhauer, the phase called "will," another, like Schelling, may prefer "feeling," a third like Hegel, may prefer "reason." Whatever the favored psychological prototype, nature and her laws are redefined as simply projections thereof, non-Egos, "posited" by the Ego of variable name.

The case of Hegel is important for its influence. The Reason he celebrated is profoundly discontinuous with the Reason celebrated by Aristotle or the eighteenth century. It consists in throwing the venerable laws of thought overboard, in the rejection of the law of contradiction, and in the identification of opposites.

The influence of this meaning of Reason on the philosophies which were official and vogue from the middle of the nineteenth century is too recent to need dwelling on. The contemporary of the post-Napoleonic restoration of monarchical legitimism and ecclesiasticism on the continent of Europe, this Rationalism's technique and formulae came ready to hand as a facile rationalization for the pretensions of these establishments to primacy in a world too weakened by wars to do them much harm, but nevertheless without any kindness for them. The Reason of Hegelianism justified in the romantic mood that rule, so comforting to the privileged classes, which the eighteenth century had justified in the mechanistic, the rule *Whatever is, is right*. As used by the eighteenth century, however, the rule was set up to support vested interests by exploiting the revolutional definition of Nature provided in the terms of the Newtonian mechanics. As used by the nineteenth century the rule vindicates an oligarchical system of privilege by employing a revolutionary definition of spirit, in which mass is "sublated" into class, and all self-government into autocracy, especially when its powers are concentrated in a legitimate absolute monarch such as was the King of Prussia. Reason *à la Hegel* was, no more than Reason according to Newton, an insight into the actual courses of experience. Each was an endeavor to portray a

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special interest within those courses as coincident with their totality. Theories of the state, especially of the type that prevailed in Germany, and theories of the church, conspicuously of the type that prevailed in England, both took Hegelianism as the means of their rationalizations. They sought, in a word, to bolster up with "reasons" a class or an establishment which was too weak by its own strength to compete with rivals for survival. For several generations Reason was held to consist in the nullification of the law of contradiction, in a dynamic which Hegel called "negativity."

9. The Hegelian point of view did not lapse because of the superior validity of the arguments of its antagonists. It has been displaced and has fallen into desuetude. It has been displaced by the success of institutions and interests which it did not serve. Of these, Democracy was one; mathematics and the material sciences were another; the theory of evolution was a third.

10. Though the French Revolution failed, the passions which it uttered did not subside. They continued to surge against every disaster and every disillusion. Broadly, they were the aspirations toward democracy which made so much of the history of the nineteenth century. They continued to propound the eighteenth century ideology with which they developed, the ideology of the natural man with his natural rights, equal, free, and pursuing happiness each in his own way. Democratic Reason used the same justifications of the democratic purpose. The views and formulae in which it consists are still revered, if not operated, in most of the countries of the western world—in France, in England, and conspicuously in the United States. They were the chief ratiocinative weapons of the British liberals of the early nineteenth century. They remain the political liturgies of such spokesmen of the vested interests of the United States as Mr. Herbert Hoover, who sums them up as "American individualism." Hegelian Reason never took an important place in this country. It had a vogue among philosophers and clerics, and helped out a little the "Genteel Tradition." But as there was no established church, evangelical dissent did well enough with the Aristotelian or Newtonian meaning of Reason, and democracy and the Newtonian implied one another.

11. As for the sciences—the more self-conscious physics, chemistry, physiology, and their subdivisions became, the more fully aware they grew of their methods, instruments, and presumptions, the less they stressed the mathematical techniques of the generations of Descartes, Newton, and Laplace; and the more they tended to favor a point of view to which the events challenging analysis and correlation grew more important than the process of ratiocination. As against the "deductive" systems of Aristotle and the mathematical disci-

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plines, a theory of induction was formulated. The canons of this procedure are associated primarily with the name of John Stuart Mill, but it can be argued that the American Charles Pierce made as significant a contribution to the theory.

Since the definition of induction there have been several endeavors to demonstrate that induction is "really" deduction. I suspect that the endeavorers have been misled by the nature of their words, and have attributed similarities in language to the things that language is language about. What is elemental in the difference between induction and deduction is the reasoner's attitude. If he regards his tools, his symbols, then they have an identity, a universality. Individuality, difference, novelty, are for him obstacles to be overcome, othernesses to be nullified. He presumes that they are either illusory or indifferent. The exception does not test the rule, but demonstrates it; that is, it is no exception. Whereas, to the genuinely inductive thinker, the exception is an exception. He regards the thing, not the tool. Every new instance is a stimulus to doubt, a challenge to inquiry, a cause of genuine uncertainty, not a step in the circle which argues a foregone conclusion. To the inductive thinker individuality, novelty, and difference are indefeasible and can not be set aside. It is not so much that he discovers an identity as that he makes an identification. And this identification is a leap over a chasm involving risk. His general principles and universal rules are the consequences of his taking such chances; they are not primary but eventual. They ensue upon the discrete data as the conclusion to them: they neither generate them nor control them, but merely express them.

To think in this manner is, however, to do violence to the native bent toward unity, identity, and universality apparent in most of the processes of the organism. It is too rigorous, too disciplined to the diversifying actualities of experience, and so too disagreeable and arduous to head and heart to suit the rationalist who prefers the smooth inevitable transitions of the deductive technique and the comforts of the closed circle of that kind of Reason. . . .

12. Neither Democracy nor the sciences of matter called for a mitigation of the staticism of Aristotelian and Newtonian and Hegelian ways. These three dominant meanings of Reason postulated a world intrinsically structural, constituted by terms and relations eternal and immutable, whose apparent changes were phenomenal illusions, to be dissipated into the fixities they disguised and belied. That is, the world these types of Reason defined looked toward the relative constancy of our language habits rather than toward the variabilities of the wider and more rapid flux of experience which these habits spanned by symbolizing. The orders of Reason are in-

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deed projections and hypostases of the orders of speech. That they should in any other wise exist, universal and eternal, and that Reason should know them and correspond to them in its inner structure must needs be an irrational assumption, it can not be a demonstration. Why should the competency of thinking depend upon the resemblance, nay, upon the identity, of the aggregated orders of nature with a particular sequence of thought called "logical"? Why should the belief that it does, be anything more than a homeopathic superstition? It is a belief that prevails, however, in the best logistical circles.

The dogma may be entirely rational, but reasonable it can hardly be. For if Reason were what this dogma declares it to be, it could not be known; Reason-as-known repudiates the dogma. Taken empirically, the logical process which converts the differents of thought's environment into the sames of thought, consist of a great and extended manipulation of symbols, propositions, equations; of inferences, transformations, and restatements. It suggests the operations of a machine which makes woods over into silk, or cows and pigs and horses and corn-meal into sausages. Or, if you prefer, it is analogous to the digestive processes of a body which transmute the varieties that enter it into flesh of its flesh or bone of its bone. Their present sameness consists, at the same time, of a new difference, for if it makes them like each other, it also makes them unlike themselves, and is a new individuality displacing those others. Empirically, we do not encounter sames except in the form of symbols, of words and signs applied to differing objects. Identity seems ever to be an inference, and difference ever an experience, and logical thinking seems for the most part to consist in the identification of the different. That such an identification must reveal rather than conceal what it identifies is a gratuitous assumption dear to the heart, an assumption whose advantages to life and thought are so obvious that the spontaneous and swift diffusion of its use, once it had occurred, would be equally obvious. Recognizing this is recognizing the logical process as a vital function, as an organ or tool of a living being in its struggle to live.

This meaning of Reason is the meaning that accrues to it from the theory of evolution. Darwinism turned the attention of students of the human mind from static correspondences to adjustive processes of change, to activities, relations, functions. As the Darwinian insight interprets experience, genera do not persist eternally. There is an origin of species—and if an origin, why not end?—of species of whatever sort; macroscopic and astronomical or microscopic and bacterial; "laws of nature" and fashions in hats. Eternity is merely change at a slower tempo than time. Universality is simply a more diffused individuality than concreteness. Necessity is simply con-

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tingency massed. Change and chance are intrinsic to each thing or relation in its unique mode; so that it happens, it survives, it lapses. The individuality of its happening is not foregone conclusion, but a spontaneous variation, a novelty, a surd. Its persistence is a consequence of the interplay of this individuality with the effective environment in which it happens; it is an adjustment, the term reached through a struggle for survival. Its lapsing is the process of defeat in that struggle. Mankind, one species among many, came to its present state from an origin in some spontaneous differentiation within an already-existing type, through a long process of still-unended struggle with its ancestors as well as its other neighbors.

Now the human animal has many differences from other animals, but the variation on which the cultural tradition has dwelt most is the "faculty" of reason. We have already observed that this "faculty," studied as it works in the courses of the daily life, tends to reduce to the function of symbolization, of speech and language; when discussed transcendentally, it is called Reason. Its observable character consists in symbols—gestures, pictures, graphs, spoken and written language, etc., etc., and the techniques of making and applying them. The application effects an extended interaction with the environment, the remote and absent parts of it as well as the near and present, and leads eventually to its control—that is, to rendering it directly or indirectly congruous with the passions and purposes of the human heart.

This meaning of Reason constitutes it a particular function in mankind's struggle to live in a world which was not made for it. Reason gets defined as an irrational organ growing from irrational roots and sustained not by the identities it reveals but by the differentiations it accomplishes. Its status is changed from a somehow supernatural faculty to a bio-psychic function; its proportions become commensurate with the residual human scale. The pretensions to cosmic insight are set in their specific place as specific activities responsive to a specific situation in a biography. The sciences of man, such as anthropology, philology, and psychology, have gathered extended confirmations of this meaning of Reason; contributions have come also from mathematics and physics. So that in the current thought about Reason psychologists like James, physicists like Mach, mathematicians like Poincaré, logicians like Schiller and Sheffer, anthropologists like Malinowski, poet-philosophers like Santayana, and philosophers like Dewey provide a consensus on it.[1]

[1] To be concluded in next issue, No. 22.

HORACE M. KALLEN.

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## BOOK REVIEWS

*A History of Indian Philosophy.* SURENDRANATH DASGUPTA. Volume One, 1922, Second Impression, 1932; Volume Two, 1932. Cambridge: University Press. Pp. xvi + 528 and xi + 620.

With the publication of volume two of this important *History of Indian Philosophy,* the second impression of the first appears. It is now ten years since Dr. Surendranath Dasgupta, Principal of the Sanskrit College in Calcutta, issued the first volume of this work. At once it took its place in the front rank of treatises on the history of Indian philosophy, a position which it still holds.

Volume One covers a good deal of the ground usually brought into view in an account of Indian philosophy, including, as it does, expositions of the philosophical ideas of the *Vedas,* the *Brāhmaṇas,* and the early *Upaniṣads;* the philosophies of the Buddhists and Jains; the Sāṃkhya and the "Pātañjali Sāṃkhya"; the Nyāya, the Vaiśeṣika, and the Mīmāṃsā; and, in part, the Vedānta. The author inserts, just before taking up the history of the development of philosophical thought in Buddhism, an interesting and illuminating chapter entitled "General Observations on the Systems of Indian Philosophy." Each chapter exhibits clearly the growth of Indian thought.

The special points of view in volume one are already familiar to students of Indian philosophy. The *Upaniṣads* present, not a system, but a collection of the speculations of numerous thinkers scattered over several centuries. The creative period in Indian philosophy lies behind the Christian Era (B.C. 700–200), with the early *Upaniṣads* in the first two centuries of that age. To the second century B.C. belong the *Vaiśeṣika-* and the *Yoga-sūtras.* The *Brahma-sūtras* and the *Pūrva Mīmāṃsā* were written about 200 B.C. The Buddhist and the Jain systems arose in the fifth century B.C. Each of the systems had a long history, centuries of speculation, debate, and exposition, before it was formulated. A statement from the former review of the first volume, in this JOURNAL, Vol. XXI (1924), pp. 77–80, will suffice to call attention to other features of the work. "Among points of special interest in this volume, the reviewer may observe that Dasgupta seems rather cool toward the view that Buddhism was largely indebted to the Sāṃkhya; the discussion, for the first time, of the Sāṃkhya system of Caraka; the position that Kapila's Sāṃkhya was theistic; the theory that the Vaiśeṣika represents an old Mīmāṃsā school; the relation of the Pūrva Mīmāṃsā to Nyāya-Vaiśeṣika and Sāṃkhya-Yoga; the contrast between Buddhism and *Upaniṣads,* between Brāhmanism, Buddhism, and Jainism, between Nyāya-Vaiśeṣika and Sāṃkhya-Yoga."

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The treatment of the Vedānta, as set forth in the first volume, is incomplete, being limited to a partial survey of the history of the Śaṅkara school, with the use of the method of Padmapāda as interpreted by Prakāśātman. In the second volume of his *History*, the author devotes a further chapter (of 227 pages) to writers belonging to the school of Śaṅkara. The chapter contains many valuable illustrations of the speculation and didactic employed by these men, written with balance and with much breadth of knowledge. All the great names, and some obscure ones, belonging to the school, are introduced. These include Maṇḍana, Suresvara, Padmapāda, and Vācaspati Miśra, belonging to the age of Śaṅkara, followed by Sarvajñātma Muni, Ānandabodha Yati, Śrīharṣa, and Citsukha, notable names in the succeeding centuries. Eight pages are given to "The Dialectic of Nāgārjuna and the Vedānta Dialectic," and eighteen to "Dialectical Criticisms of Śāntarakṣita and Kamalaśila as Forerunners of Vedānta Dialectic." This is followed by eleven pages on the "Dialectic of Śaṅkara and Ānandajñāna." The remainder of the chapter is taken up with expositions of points of view of Vimuktātman, Rāmādvaya, Vidyāranya Nṛsiṃhāśrama Muni, Apaya Dīkṣita, Prakāśānanda, and Madhusūdana Sarasvatī. In the early pages of the chapter is found an illuminating discussion of "Thought and its Object in Buddhism and in Vedānta."

While the philosophical elements in the various Purāṇas are to be reviewed in a later volume of his *History*, still, the author devotes the second chapter of his second volume to the *Yoga-vāsiṣṭha-Rāmāyana*. For this he gives the following reasons: "The philosophical view with which it is concerned, and which it is never tired of reiterating, is so much like the view of Śaṅkara and of Vijñānavāda Buddhism, that its claim to treatment immediately after Śaṅkara seems to me to be particularly strong. Moreover, the various interpretations of the *Vedānta-sūtra* which will follow are so much opposed to Śaṅkara's view as to make it hard to find a suitable place for a treatment like that of the *Yoga-vāsiṣṭha* unless it is taken up immediately after the chapter dealing with Śaṅkara." The poem, consisting of 23,734 verses, belongs to the seventh or eighth century (A. D.). Dr. Dasgupta's is the first adequate exposition in English of this important work. Some of its positions are set forth in the following quotations and notes:

"There is in reality no perceiver, perceived, or perceptions, no vacuity (*śūnya*), no matter, no spirit or consciousness, but pure cessation or pure negation, and this is what we mean by Brahman." "The world as such never existed in the past, nor exists now, nor will exist hereafter; so it has no production or destruction in any real sense. But yet there is the appearance, and its genesis has

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somehow to be accounted for. The ultimate entity is . . . of the nature of pure cessation." The order of evolution of appearance is due to pure accident. And the creations are all ideal and as such have no reality apart from their being as mere appearance. "All that appears as existent does so only as a result of the conceptual activity of thought."

As for the doctrine of emancipation, "To a person who has a perfect realization of the nature of the world-appearance, as being mere conceptual creation from the Brahman and having no existence at all, there is no sorrow in this world-appearance nor any such quality which is different from Brahman." Emancipation can be attained in the life of a person or after his death. In the former case "he is absolutely unattached to anything, but is not cut off from society and can seemingly take part in everything without losing his mental balance in any way."

"One of the special features of the *Yoga-vāsiṣṭha* is the special emphasis that it lays upon free-will and its immense possibilities, and its power of overruling the limitations and bondage of past *karmas.*" "The *Yoga-vāsiṣṭha* not only holds that *pauruṣa* (mental and physical exertions made in properly advised ways) can conquer and annul *daiva,* but it even goes to the extreme of denying *daiva* and calling it a mere fiction, that, properly speaking, does not exist at all." "*Prāṇa* (the movement of the intellect as *ahaṃkāra*) is essentially of the nature of vibration (*spanda*), and mind is but a form of *prāṇa* energy, and so by the control of the mind the five *vāyus* are controlled." "The unreal and illusory manifestations of the reality, are produced by the operation of this inner activity of the characterless spirit, which is in itself nothing but subject-objectless pure consciousness. But this inner and immanent movement does not seem to have any dialectic of its own, and no definite formula of the method of its operation for its productions can be given; the imaginary shapes of ideas and objects, which have nothing but a mere perceptual existence, are not due to a definite order, but to accident or change (*kākatālīya*). Such a conception is indeed very barren, and it is here that the system of the *Yoga-vāsiṣṭha* is particularly defective. Another important defect of the system is that it does not either criticize knowledge or admit its validity, and the characterless entity which forms its absolute is never revealed in experience."

The subject, "Speculations of the Medical Schools," which forms the third chapter of volume two, is included in the *History* for the following reasons: "In ancient India, Biology had not grown into a separate science; whatever biological ideas were current in India were mixed up with medical, osteological and physiological specula-

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tions, the only branches of study in ancient India which may be regarded as constituting an experimental science."

So far as texts are concerned, "We thus find that Ayur-veda was regarded by some as a Veda superior to the other Vedas and represented by their followers as a fifth Veda, as an *upa-veda* of the *Atharva-veda,* as an independent *upa-veda,* as an *upāṅga* of the *Athara-veda* and lastly as a *vedāṅga.*" Of the Āyar-veda we now possess the treatises of Caraka and Suśruta.

Aside from the discussions on physiological topics, including sections on "The Foetus and the Subtle body," and "Foetal Development," the chapter is interesting as showing how use is made of logical definition and method for diagnosis and to determine the nature of disease and of its cure.

"The ideal of the good life in Caraka is not the same as that of the different systems of philosophy which are technically called the Science of Liberation (*mokṣa-śāstra*). The fundamental idea of a good life is that a life should be so regulated that the body and mind may be free from diseases, that it should not run into unnecessary risks of danger through carelessness, that it should be virtuous, pure and moral; that it should be a prudent and wise life which abides by the laws of polite society and of good and loyal citizens, manifesting keen alertness in thought and execution and tending constantly to its own good—good for all interests of life, body, mind and spirit."

"Medicines may, however, in the case of those who are not cursed by the commission of sins of great enormity, prolong the normal length of life. It is here that Caraka and his followers differ from all other theories of *karma* that flourished on the soil of India."

In the fourth and last chapter of volume two, Dr. Dasgupta discusses the philosophy of the *Bhagavad Gītā.* His exposition is based upon the contention that the *Gītā* has a system all its own, not one growing out of an attempt to synthesize Sāṃkhya and Vedānta philosophies. This is because the *Gītā* is a book of high antiquity, antedating Buddhism. "The *Gītā* may have been a work of the Bhāgavata school, written long before the composition of the *Mahābhārata,* and may have been written on the basis of the Bhārata legend, on which the *Mahā-bhārata* was based. It is not improbable that the *Gītā,* which summarized the teaching of the Bhāgavata School, was incorporated into the *Mahā-bhārata* during one of its revisions, by reason of the sacredness that it had attained at that time."

Some of the author's expositions are of special interest. The philosophy of the *Gītā* "is diametrically opposite to that of Śaṅkara." "The *yoga* of the *Gītā* is quite different from the *yoga* of Patañjali, and it does not seem at all probable that the *Gītā* was aware of

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Patañjali's *yoga* or the technical terms used by him." The word *sāṃkhya* is used in the *Gītā* "in the sense of path of knowledge or of philosophical wisdom."

One or two sentences may be quoted from the author's excellent exposition of *dharma*. "The word *dharma* in the *Gītā* does not mean what Jaimini understood by the term, viz., a desirable end or good enjoined by the sacrifices. . . . The word seems to be used in the *Gītā* primarily in the sense of an unalterable customary order of class-duties or caste-duties and the general approved course of conduct for the people, and also in the sense of prescribed schemes of conduct. The meaning of *dharma* as "old customary order" is probably the oldest meaning of the word. . . . The central meaning of the word *dharma* in the *Gītā* is therefore the oldest Vedic meaning of the word, which is a much earlier meaning than the latter day technical meaning of the word as found in the Mīmāṃsā. *Dharma* does not in the *Gītā* mean sacrifices (*yajña*) or external advantages, as it does in the Mīmāṃsā, but the order of conventional practices involving specific caste-divisions and caste-duties."

There are also in this chapter carefully developed studies of such terms as *prakṛti, puruṣa, avyakta,* and *karma.*

The section entitled "The Ethics of the Gītā and the Buddhist Ethics" is full of interest. "The *Gītā* bases its ethics mainly on the necessity of getting rid of attachment and desires from which proceeds greed and frustration of which produces anger." "A man should always follow his own caste-duties, which are his own proper duties, or *sva-dharma.*" The reply to the charge that war implies injury to living beings is "that the proper way of performing actions is to dissociate one's mind from attachment." "To give up work can be significant only if it means the giving up of all desires for the fruits of such actions." "The *samādhi* of the *Gītā* is not a mere concentration of the mind on some object, but communion with God, and the wisdom, or *prajñā,* of the *Gītā* is no realization of any philosophic truth, but a fixed and unperturbed state of mind, where the will and intellect remain unshaken in one's course of duty, clear of all consequences and free from all attachments, and in a state of equanimity which cannot be shaken or disturbed by pleasures or sorrows." "Morality from this point of view (of the unattached mind) becomes wholly subjective, and the special feature of the *Gītā* is that it tends to make all actions non-moral by cutting away the bonds that connect an action with its performer."

"The *Gītā* is probably the earliest document where a definite statement is made regarding the imperishable nature of existent things and the impossibility of that which is non-existent coming into being. . . ." "The main purpose of the *Gītā* is not to find out

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how one can tear asunder the bonds of *karma* and stop rebirth, but to prescribe a true rule of the performance of one's duties."

Three passages under the heading "God and Man" must suffice to complete this rapid survey of the chapter. "The earliest and most recondite treatment regarding the nature and existence of God and His relation to man is found in the *Gītā*." "This doctrine of the incarnation of God, though not dealt with in any of the purely speculative systems, yet forms the corner-stone of most systems of religious philosophy and religion, and the *Gītā* is probably the earliest work available to us in which this doctrine is found. The effect of its introduction and of the dialogue form of the *Gītā*, in which the man-god Kṛṣṇa instructs Arjuna in the philosophy of life and conduct, is that the instruction regarding the personality of God becomes concrete and living." "For the God of the *Gītā* is not a God of abstract philosophy or theology, but a God who could be a man and be capable of all personal relations."

These volumes impress the reader with their solidity and scope. The work is thoroughgoing, clearly set forth, revealing the erudite and mature scholar. The notes, mostly in Sanskrit, constitute a mass of documentation, showing that the chief sources for the preparation of such a *History* as this have been fully surveyed. While the author is conversant with the history of Western philosophy, still, he does not attempt to explain Indian and Western systems in terms of each other. All the while he is bent on writing a thorough and impartial history of *Indian* philosophy. The whole weight of his learning and labor is imposed upon the Indian point of view. In this respect his *History* stands practically alone, and it is for this reason that it is of such great importance.

Thirty-four pages of volume one and eighty-six pages of volume two are occupied with an exhaustive index of both Sanskrit and English references. The book-work is excellent and both volumes are remarkably free from errors.

The author announces that volume three, which is well along towards completion, will contain a fairly elaborate account of the principal dualistic and pluralistic Indian systems, "such as the philosophy of the Pañca-rātra, Bhāskara, Yāmuna, Rāmānuja and his followers, Madhava and his followers, the *Bhāgavata-purāṇa* and the Gaudīya school of Vaiṣṇavism." Volumes four and five will deal "with the philosophy of Vallabha and some other lesser known schools of Vaiṣṇavism, the philosophy of the Purāṇas, Tantras, the different schools of Śaivas, Śāktas, Indian Ascetics, the philosophy of right and law and the religious systems that have found their expression in some of the leading vernaculars of India."

This great work is planned on very broad and inclusive lines and

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bids fair to become the authoritative work in English on the history of Indian philosophy. Volumes one and two speak in the highest terms for the promise of those which are to follow.

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*The Physical Significance of the Quantum Theory.* F. A. LINDEMANN. Oxford: At the Clarendon Press. 1932. 148 pp.

This book by a distinguished physicist is a notable contribution to the epistemological problems raised by the quantum theory.

During the era of classical physics physical phenomena were described primarily as the motions of particles or of waves. Thus in the nineteenth century the phenomena of interference and diffraction furnished the basis for the interpretation of light as a wave motion. After the work of Maxwell light was definitely conceived to consist of electromagnetic waves. But the nineteenth century also witnessed the discovery of positively and negatively charged particles, of which the atoms of the chemist appeared to be constituted. The emission and absorption of electromagnetic waves was attributed to the motion of the electrified particles in the atom. Thus classical physics furnished the material for a theory of the structure of the atom and of its interaction with electromagnetic radiation. It is now well known that the classical concepts proved to be inadequate for a description of elementary processes in the atom and in radiation. The inadequacy of the classical theories has led to the quantum theory which in recent years has attained a relative stability. The equations which enable one to describe and predict quantum phenomena are generally accepted. There remains, however, the problem of the interpretation of the quantum theoretical concepts. This problem of interpretation is especially exemplified by the complementary use of the concepts of particle and of wave. Electrons, which had been demonstrated to be particles, have been shown to exhibit wave characters. Light, which was definitely supposed to be a wave motion, has exhibited properties which belong to particles. Thereby the sharp distinction which the classical physicist made between particles and waves disappears and thus the clarity of the classical picture of physical reality is lost.

One authoritative mode of expounding the dualism, that of Dirac, is the following. The fundamental idea of the quantum theory is that an atomic entity, such as an electron, is to be described as existing in a certain state. The functions which describe the state satisfy a wave equation, called Schrödinger's equation. Now a state may be formed by the superposition of a set of component states. As is well known, the interference phenomena of light were explained in

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terms of a superposition of waves. Accordingly the superposition of states which are described by wave functions is the quantum theoretical basis for the description of a reality which manifests wave characteristics. The wave functions are interpreted as probability functions. That is, the square of the absolute value of a wave function for certain values of the coördinates determines the probability that the electron is to be found at the position defined by the space coördinates. We can therefore represent the electron as a particle whose probability of position in space is determined by a wave function. The interference phenomena of electrons, and also of photons, are described by an interference of probabilities which represent the component states. The destruction of light by interference, for example, is described as a superposition of states so that the probability of position for the photon in the resultant state is zero. In this way both the corpuscular and wave properties of electrons and photons are expressed by the quantum theory.

Professor Lindemann, while accepting the rigorous mathematical theory, seeks, however, a more physical basis for the quantum theory. The thesis of his book is that the difficulties in the interpretation of quantum phenomena arise from the persistence of the habit, acquired in the classical study of large-scale phenomena, of separating the space-time description of a process from its dynamical description. In classical physics it was possible to assign space-time coördinates to a body independently of dynamical coördinates, because the process of measurement did not appreciably disturb the state of a system. But the measurement of an atomic system disturbs it. The space-time description of an atomic entity must be supplemented by a statement of the changes in the dynamical coördinates which are produced by the measurement. A principle of indeterminacy shows how the dynamical variables are changed by space-time measurements which have specified limits of accuracy. By a direct employment of his principle of indeterminacy the author obtains by simple and original methods the most important results of the quantum theory.

The author's solution of the dualism between particles and waves is as follows. He adopts the view that reality is built up of particles. There is no reality attached to the wave aspect; it is a makeshift to get over the failure of space-time description which occurs when the error introduced by observation is comparable with the quantity to be measured. The wave equations are merely an expression of the fact that the neglected dynamical coördinates can not be omitted from a spatio-temporal description of atoms.

Probably the most interesting philosophical presupposition in the book is the assumption that all coördinates must be observable in

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principle. Any spatio-temporal statement must imply that the particle is in the same circumstances as it would have been had the appropriate measurement been made. Now the determination of position requires an interaction which produces a change in momentum. The position of a particle at rest is therefore changed and the measurement is not reproducible. Thus the concept of exact position loses its meaning; the precise space-time concepts of classical physics are limits. The epistemological presuppositions of the quantum theory are aptly described by Professor Lovejoy's phrase, the experimental theory of meaning. The reviewer has also employed the expression, subjectivistic criterion of reality. The rigorous application of this criterion leads writers on the quantum theory to doubt the existence of the electron between observations.

Professor Lindemann's book is an original and brilliant contribution. Except for one chapter the book is non-mathematical and should be as accessible to philosophers as Bridgman's well-known book. Although the book is not a substitute for a rigorous exposition, it is an admirable introduction to the spirit of the quantum theory. The quality of the style is exemplified by the concluding paragraph:

"Be that as it may, the recognition of the inadequacy of spatio-temporal coördinates has introduced a new and resilient factor into the hard and unyielding mechanism of classical physics. The harsh sequence of cause and effect has lost its power, the implacable rule of determination its rigour. The narrow crust in which our predecessors encased our mental processes has been breached and we are entitled henceforward in the order of our physical concepts to question the grim pre-eminence accorded by age-long consent to time."

V. F. Lenzen.

University of California,
Berkeley.

*Philosophical Aspects of Modern Science.* C. E. M. Joad. New York: Macmillan Company. 1932. 344 pp.

The fundamental thesis of Mr. Joad's philosophy is that knowing is awareness of an object which is unmodified by the process. Thus knowing is not creative, but exploratory, revealing to the knower the nature of the diverse orders in the universe. In perception we become aware of the realm of sense-data. The apprehension of sense-data leads the mind to think of subsistent objects. The realm of subsistence includes physical objects, such as tables and chairs, and scientific objects, such as electrons and electromagnetic waves. The realm of value extends beyond that of subsistence but, somewhat in the manner which Plato has described, the mind is enabled to attain

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fleeting glimpses of beauty through the contemplation of works of art which belong to the subsistent realm. The mystic, however, is directly aware of values.

In addition to the worlds of subsistence and value, which are static, eternal, and independent of mental activity, Mr. Joad postulates the presence in the universe of a dynamic force or principle of change. Individual minds are expressions of the universal force or principle of life. Life is thus a dynamic impulsion, whose nature is to change and evolve, and whose activity is to know. The two orders of reality, life and value, are radically opposed.

Now Mr. Joad finds that the metaphysical speculations which are based upon modern physics are idealistic theories which assimilate the universe to mind. In contrast to his own fusion of Platonism and Bergsonism, Mr. Joad holds that Eddington and Jeans have distinguished between reality and appearance, have insisted on the mental and even personal nature of the world of reality, and have adopted a malicious attitude toward the world of appearance which leads to a denial of objective reality to the familiar world and even to the world of science.

The present book is a criticism of the metaphysical theories which have been based upon contemporary physics. In the first four chapters the author criticizes the idealism of Eddington and Jeans and Russell's theory of neutral stuff. In the following three chapters he outlines his constructive theory of the relations between the realms of sense-data, physical objects and scientific objects. In two succeeding chapters he turns to metaphysics and expounds and criticizes the monistic theory which is set forth by Eddington. The two final chapters present Mr. Joad's own pluralistic metaphysics.

Mr. Joad's criticism of Jeans and Eddington is excellent. I wholly agree with him when he says, "It may, I think, fairly be urged that the temper of mind from which these metaphysical speculations spring, and in which they are conducted, is fundamentally unscientific." Mr. Joad's exposition of his own theory is clear and readable. The discussion of the theory of value contains paragraphs of delightful literary quality. I would offer, however, two criticisms of this admirable book. One is that the philosophy of science which it contains is very scanty. A distinguished German philosopher once remarked to me that Reichenbach's *Philosophie der Raum-Zeit Lehre* is physics and not sufficiently philosophical. Of Mr. Joad's book one may say that it is essentially theory of knowledge and metaphysics with only incidental use of scientific material. With admirable judgment, Mr. Joad refrains from criticizing the scientist on his own ground. Nevertheless, there are many topics which ought to be included in a book with the given title, but which are entirely ignored.

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As a second criticism I remark that the views of Eddington and Jeans are given much more notice than is warranted. The speculative tendencies of these physicists are not to be taken as representative of the best philosophical discussion of contemporary physics. Mr. Joad does not even mention the very important positivistic movement in Central Europe, the leaders of which are Schlick, Carnap, Philipp Frank, etc. The members of this school are competent both in physics and philosophy and their emphatic rejection of metaphysics stands in sharp contrast to the views of Eddington and Jeans, who concede themselves to be amateurs in philosophy.

This leads to a final comment upon Mr. Joad's book. Within the frame of ideas to which he restricts himself his discussion is admirable. I am impressed, however, with the interest exhibited by the younger generation of philosophers and theoretical physicists in the logical positivism of the Viennese school and the related pragmatic views of C. I. Lewis. As definitely expressed by Carnap, the logical positivist holds that the traditional issue between idealism and realism is an illusory one. But the realistic revolt against idealism and the disputes between neo-realists and critical realists presupposed that the issues were meaningful. It would appear that realists and idealists should discontinue their civil warfare and unite against the logical positivist, in order to preserve, if possible, the problems which have been inherited from several centuries of philosophical speculation.

V. F. LENZEN.

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*Philosophy and Modern Science.* HAROLD T. DAVIS. Bloomington, Indiana: The Principia Press. 1931. Pp. xiv + 335.

This is a substantial piece of work devoted not to modern science in general, but rather to modern physical science. Its aim is to "set forth as simply as possible the basic postulates of physics and to trace their implications." The major part of the book is devoted to a generally successful non-technical exposition of the development of modern physical theories. The account of their philosophical consequences is distinctly inferior.

A sketch of the philosophical background of modern physics serves as an introduction to a detailed exposition centering about the following topics: (1) the problem of the ether and the Special Theory of Relativity, (2) gravitation and the General Theory of Relativity, (3) the development of atomism and quantum physics, (4) recent cosmology and the nature of cosmic radiation. All of these, with the partial exception of the third, are treated very ably indeed. Thus.

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the intimate relationship between Relativity physics and classical physics is actually revealed and not merely asserted. Primary sources are reproduced extensively in the historical portions of the work. Experimental detail is abundant and well-chosen. The result is a surprisingly well-rounded account, achieved without mathematical complexities.

Apart from one or two minor factual slips, the chief defect is the discussion of recent quantum theory. Here the reader is brought as far as wave and matrix mechanics and left to wonder how it is that matter and radiation can possess both wave and particle properties. The contradiction, however, is merely apparent. A judicious use of Bohr's concept of complementarity would have made this reasonably clear without formulae and thus contributed to a less misleading picture of contemporary quantum theory. Darwin's recent *The New Conceptions of Matter* demonstrates that such an objective is attainable.

As popularization of the better sort, *Philosophy and Modern Science* possesses genuine merit. As an essay in the philosophy of physics, it leaves much to be desired. Certain key problems are posed, such as continuity and atomism, gravitation and geometry, the interaction of matter and radiation, the nature of probability (to which a special chapter is devoted); but the critical apparatus brought to bear upon them is weak. To be sure, rigorous analysis may have been sacrificed in the effort to retain simplicity. At all events, the fact remains that the fragmentary philosophical passages contribute little to the clarification of the fundamental concepts of modern physics.

Professor Davis means by the philosophy or metaphysics of science not traditional ontology, but simply the attempt to explore the meaning of "the concepts upon which modern science seeks to found its theories" (p. 1). However, the absence of a rigorous critical apparatus with which to conduct this exploration exhibits itself at the very outset in the author's essentially metaphysical conception of physics. As the use to which he puts the terms "subjective," "objective," and "rational" indicates, he is guilty of the widespread error of treating the entities of physics in the fashion of realistic metaphysics. Such a treatment misconstrues the relationship between the "world" of physics and the ordinary common-sense world and, in the words of Professor McGilvary (this JOURNAL, vol. XXIX, 1932, p. 371), makes "metaphysical entities out of mathematical equations." This error can be avoided best by employing the operational analysis of physical concepts as developed by (Peirce, Dewey,) Bridgman, Carnap, and Lenzen. If in this way an end be put to the hypostatization of mathematical relationships.

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the connection between mathematics and physics and between physics and the common-sense world, so obscure in Professor Davis' book, becomes immeasurably clearer.

The author does discuss Bridgman's operational point of view. He recognizes that it entails the elimination of many questions as meaningless and concludes: "Perhaps this is the solution of the problem of philosophy, but while man sees or thinks he sees the possible synthesis of natural law in such abstract concepts as entropy and action he will not wish to dismiss thus lightly from his speculations any abstractions which might lead to deeper insight (p. 39)." If this is simply a warning against too facile a disposal of questions as meaningless, the point is well taken. This is a danger to which all "corrective" theories of meaning are subject. But where, as in Professor Davis' own struggles with the question of the existence of the ether, it is apparent that no intelligible alternative is being employed, the failure to see the basic importance of the operational approach is difficult to excuse.

ALBERT E. BLUMBERG.

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## JOURNALS AND NEW BOOKS

THE NEW SCHOLASTICISM. Vol. VI, No. 4. A French Critique of Édouard LeRoy's *Problème de Dieu: Howard Shepston.* St. Albertus Magnus and His Works in Oxford University: *Eusebio Gomez.* The Theory of Theory: *D. C. O'Grady.*

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ARCHIVIO DI FILOSOFIA. Anno II, Fasc. I. L'Errore: *B. Varisco.* Sigieri di Brabante e l'elogio di Dante: *G. Flores D'Arcais.* La genesi formativa della filosofia di Hegel: *R. Miceli.* Sugli scritti di Egidio Romano: *G. Bruni.* Il problema filosofico dell'amore nell'Opera di Leone Ebreo: *G. Fontanesi.*

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## NOTES AND NEWS

In No. 15 of the current year of this JOURNAL, we printed the announcement of the Hartmann Prizes, which stated that the essays must be sent in before June 1, 1933, to the Director of Studies, British Institute of Philosophy, London. We have received word that the time has now been extended to January 1, 1934.

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On Zeno's Paradox of Motion. RALPH B. WINN.
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**Volume XXIX. No. 16. August 4, 1932.**

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**Volume XXIX. No 19. September 15, 1932.**

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A Note on Compound Propositions. DAVID E. SWENSON.
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**Volume XXIX. No. 20. September 29, 1932.**

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A Fundamental Difference between the Natural and Social Sciences. W. EDWIN VAN DE WALLE.
The Principles of Symbolic Logic. F. C. S. SCHILLER.
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# SYMBOLIC LOGIC

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*and*

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ASSOCIATE PROFESSOR OF PHILOSOPHY,
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# THE JOURNAL OF PHILOSOPHY

REASON AS FACT AND AS FETICH (II)[1]

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*By*

CLARENCE IRVING LEWIS

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*Contemporary Idealism in America*

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# The Journal of Philosophy

## REASON AS FACT AND AS FETICH (II)[1]

13. Reason, the argument sums itself up, must be either the name for a pattern of action which discharges a vital function for a biological organism, or a parasite upon that organism, sustained by its strength and doomed with its destruction. In the latter case, the fullest flowering of Reason would concur with the complete reduction of the organism to nothing. If the vision of "truth" be that flowering, the attainment of the vision would be the annihilation of the seer. This is not, however, the belief even of those thinkers to whom Reason is somehow a more than natural power of the psyche. For them, also, Reason is functional and, with "truth," more valuable in what it performs than in what it presents. Suppose that these supernaturalists do put Reason at the last dialectical stand of staticism. Suppose that they do talk about it as man's unchanging vision of the changefulness of change. What have they gained? They acknowledge it as a vision, and they acknowledge it as a human vision. This acknowledgment is the very least they can make if Reason is to be a subject of discourse at all. But in making the acknowledgment, they also accept Reason as an event among other events, with a beginning, a history, and an end, responding and being responded to among the occurrences in which it is itself an occurrence. But as such an event, the validity of Reason is no more inevitable and no less contingent, no more detachable from its consequences than the form of the horse's toe which is one reduced from five, or a whale's vestigial feet, or a man's vermiform appendix. The present phase of each of these organs, or of any other, is the moment of its function and effect in the life-history of the organism whose organ it is or was. And which organ shall prosper and which is doomed is not predestination but luck and pluck. To say more than so much of Reason would be to seek rationality at the expense of reasonableness; it would be wishful thinking, an exercise of faith, not to listen soberly the deliverance of experience.

David Hume observed this in the very heyday of the Age of Reason:

> To consider the matter aright [he said], reason is nothing but a wonderful and unintelligible *instinct* in our souls, which carries us along a certain train of

[1] Continued from preceding issue No. 21.



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ideas, and endows them with particular qualities, according to their particular situations and relations. This instinct, 'tis true, arises from past observation and experience; but can anyone give the ultimate reason why past experience and observation produce such an effect, any more than why nature alone shou'd produce it? Nature may certainly produce whatever can arise from habit: Nay, habit is nothing but one of the principles of nature, and derives all its force from that origin.

And what involves beginnings and endings, if not habit?

In sum, rationality is a fortuitous relationship which has established itself as an habitual equilibrium. An adjustment mediated by symbols and not an insight (save into symbols), what chiefly characterizes Reason is not objective reference, but inner mood. We enjoy, in William James's apt phrase, a *sentiment* of rationality. This sentiment, he tells us, defines itself directly as a strong feeling of ease, peace, rest. It is the moment of an accomplished transition from perplexity, doubt, and puzzlement to assurance and to certainty. Lively relief enters into it, no less than peace, and it distinguishes itself from other moods with the same components by a kind of reference to the doubt and confusion just overcome. The absence of those is its criterion; rationality being thus "a feeling of the sufficiency of the present moment, of its absoluteness—this absence of all need to explain or account for it or justify it." This is why *anything* that we may think with perfect fluency becomes identified as rational: the familiar, the customary, whatever banishes uncertainty from the future, whatever defines expectancy, whatever *closes* the prospect. Such things at least mitigate, and, at most, dissolve, change, novelty, individuality, and conflict, by subordinating them to a single formula or rule. "Anything," however, means nothing special. It is a portmanteau word. Objects which satisfy the sentiment of rationality begin to do so accidentally and contingently, and do so necessarily simply by continuing in the chance rôle. For necessity is but chance repeating itself as habit. Things rationalized thereby are events of adjustment in the fortunes of a man's life or a community's history.

This adjustment need no more resemble the terms involved than a knife need resemble the bread it slices or a bottle the liquor it shelters. When it happens, whether *instanter* or in the course of time, its object gains a warmth, an intimacy that assimilates it to the inwardness of thought; we feel at home with it; we call it "self-evident." But, as recent events in mathematics sufficiently show, "self-evidence" may lapse at any time. A strangeness may overspread any and every rational thing, doubt set in anew, with all its perplexities and conflicts. Then the thing forfeits its rationality to some other thing which has ousted it from its place. Yet the now irrational object need not have lost any of its logical characteristics

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or dialectical necessity. These may still endure. But having become incongruous with the passions and purposes of the man or society that had found peace in them, rationality departs from them. The fortunes of God at any time, but especially since the rise of the Newtonian meaning of Reason, tell the tale. . . .

14. So much for Reason in the Darwinian meaning of the term. While this was coming to fulness and maturity, the sciences of non-living matter were developing by leaps and bounds; and so with a certain parallelism, but far more rapidly and independently, were the mathematical sciences. The conflict and coöperation of mathematicians over each other's works produced a wonderful expansion of the field as an autonomous domain of Reason, while at the same time the requirements by the experimental sciences of mathematical materials and techniques grew in volume and refinement. How competent, to those inured to the discipline, mathematical form is to satisfy the sentiment of rationality, is an old story that dates from Pythagoras. Could, then, the urge to subdue the manifold and perplexing flux of experience to the unified and clear certainties of mathematical equation fail to push on the troubled heart? The record tells of recurrent attempts to restate the sciences and the arts in mathematical language and mathematical procedures. From Galileo's day on, the endeavor proceeded with increasing momentum and success that came, toward the end of the nineteenth century, into a new prosperity. The matrix of this prosperity was the invention of a new domain, a promising no-man's-land where logic and mathematics meet. A new discipline took shape, analogous to biophysics or physical chemistry. It was the discipline of mathematical logic, also called symbolic logic and logistics. What seems most to have set it up was the fabrication and working out of a new system of signs, still strange and still remote even from the most long-suffering and the most abstract of professional philosophers.

These signs were arbitrarily made significant of other signs and were employed to break up the terms of the mathematical and physical sciences into the simplest and fewest elements—terms and relations—possible, and then to build up these sciences in logistical structures as parsimoniously and rigorously as might be. Such craftsmen as Peano, Frege, Whitehead, Russell, among others, contributed variously to the initial stages of the enterprise—Peano invented many of the signs; Russell and Whitehead the logistical restatement of mathematics and physics in a hierarchy of equations expanding like an inverted pyramid from simple to complex. Since the turn of the century, the enterprise has recruited many workers and been acknowledged as a respectable discipline by place in academic curricula. There is an ambition among the cognoscenti to re-

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state all the languages of the life of reason in the language of mathematical logic. They exhibit a mystical faith in it as the *dernier cri* of scientific thinking. To them nothing can be "really" logical except in this mode, with its symbols of symbols of symbols for tools, its mathematical anatomy and its far remove from the teeming data and events whence its symbols ultimately derive. These traits impart to the discipline a formality and rigor which can be paralleled only by the logic of scholasticism. Its advocates, indeed, aspire to be to the sciences what the scholastics had been to medieval theology, only more so. They look toward a Thomas-like *Summa*. I suspect that the enthusiasm for this discipline is due to a natural enough confusion of difficulty with competency. The feel of the difficulty overcome deepens the sentiment of rationality. The fascination of Hegelism and of chess owns a similar ground in the psyche. The other source of enthusiasm seems to lie in the equally natural confusion of symbolistic ritual, become fluent through habituation, with successful reasoning. Executed "decently and in order," those things, as ecclesiastics and metaphysicians know, have an air.

In their superlative estimation of mathematics, however, these twentieth-century scholastics are responsive to a crucial factor in the progress of the sciences of matter. This progress is largely due to the improvement of the techniques of measurement. The techniques again are processes run through by machines. And the machines, once started, go automatically. They leave little or nothing for the experimenter or investigator to do. He just stands by, a spectator at the show, an embodied Pure Reason beholding Eternal Truth manifest itself. As Industry, operating in factories with great automatic machines, offers what it produces to the ultimate consumer with the slogan, "untouched by the human hand," so Science appears by way of offering what it produces to the ultimate consumer with the slogan "untouched by the human mind."

Because of machineries of measurement there prevails in these days the widespread illusion that the upshot of an experiment or a statistical manipulation is a "fact" revealed, not an event transformed. And when such a "fact" is stated, not in the language of the daily life, but in the remote, attenuated equations of mathematical form, there accrues to it an aura of inevitability, of necessity, which imposes. The "fact" and its relations are set forth as the revelation of the hidden eternal structure of the world without; and by the revealing act Reason seems to be once more restored to the hegemony over the propulsions of the psyche which it had been endowed with from the beginning. The event is however esthetic, not intellectual, of the same kind as the garb of ecclesiastics, warriors, policemen, and courtesans. As that prince cardinal among

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logisticians, Bertrand Russell himself, says somewhere: "Logic liberates the imagination as to what may be; it refuses to legislate as to what the world is."

15. The Great War did something violent to the structure of contemporary society. The process and new direction of continuous social change brought in during the Age of Reason by the industrial revolution has been disrupted. The compenetrations of old and new are less complete. Folkways and establishments stick out like fractures, self-revealing. The conventions of our thinking, our canons of knowledge and belief are also in disruption, nor has the excitement occasioned by Freud and by Einstein diminished the new confusion. Reason has not been able to profit by the event. Each one of its major meanings, here reviewed, belongs with one or another institutional system, one or another more or less mighty vested interest sustaining a precarious balance of power in an enduring struggle for dominion and prestige. Religion, science; church, state; class, mass; capitalist, socialist; worker, gentleman; bourgeois, artist; their ranks and their divisions—each makes its special meaning of Reason. Each opposes its own to the others, with which it nevertheless compenetrates without coinciding in the relentless give and take that is the life of all.

But between the species and varieties of the Aristotelian, Newtonian, and logistical meanings of Reason a certain coöperation is easy which they can not accomplish with the evolutionary or functional. For they join hands in support of universals and eternity, of a necessary order in the nature of things, whether gods or ghosts or gorillas enter into that order, whether matter or spirit, and whatever relations these entrants may bear to one another. The functional view finds no such order. It acquiesces in the changes and chances of the stream of life. It takes account of the special reference which human needs and human vision must have because they *are* human and not everything else in addition. It acknowledges both the compulsion exercised by the changing environment upon the needs and vision, and the frame of humanizing perspectives in which the latter set the former. The functionalists prefer to keep thought relevant to the time, the place, and the circumstances of thinking. To them, reason, meaning, is, like motion in the theory of relativity, a local event specific to a limited frame of things. They are more modest in their pretensions and more sober in their claims than the eternalists.

But the eternalists insist that the functionalists must be wrong since the arguments against the eternalist meaning of Reason presume the logical necessities they argue against. How what is presumed must be "necessary" deponent saith not. Necessary or not,

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presumed or imposed, "logical necessities" are themselves beyond proof. If they impose themselves, it is by *force majeure*. Thinking goes on also in other ways than the linguistic modes they give a name to, and there are other meanings to Reason, as we have well seen. The irreducible conflict of these meanings is sufficient to establish that the championing of one or another is an act of faith; if you will, of animal faith. This imparts to Reason its dynamic and establishes it as the favored child in the home of human life. The favored child because the faithful servant. Faith is here the surd in rationality.

16. The philosophic tradition has been far from unaware of these conflicts and inconsistencies in the heart of the Reason whose central aspiration is consistency. It tells now and again of one logician or another who has sought to establish rationality in Reason by making a distinction. "Understanding" has been invented to supplement Pure Reason; Practical Reason to perform what Pure Reason could not; "Action" to divide the realm of experience with Theory, that Pure Reason should in the end rule both. Thus might due reverence be paid to the working life of thought while the otiose rationality, the securities and certainties of an eternal and universal logical order, are kept undiminished and intact.

The present-day terms of the division are "Logic" and "Psychology," mathematical definition of rational structures and behavior consisting in adjustive and controlling responses to congeries of successive events. To Reason has been attributed "suspended judgment," attendance upon the "weight of evidence": to psychology that irrational determination which goes with the absence of those attitudes, an absence upon which the conduct of affairs and the practice of business and the professions seems conditioned, if civilization is to be a going concern. For the procession of the evidence regarding any matter is interminable and judgment could stay suspended forever. But soon or late the procession is cut off, decision is made. There is nothing in the nature of the evidence itself that cuts it off. The psyche does that, and according to the interests which are concerned about the evidence, lets loose the judgment. As often as not, the same evidence weighs more heavily now in one, now in the other, of two opposite directions. The law provides us with innumerable instances of this sort, and it is an open secret how the scale is tipped by such imponderables as the skill of the advocate, the will-to-believe of judge and jury. The Sacco-Vanzetti case is an outstanding contemporary instance, but the story of any reversed decision re-enforces the observation.

If I speak first of the law, it is because concerning this institution, next to the sciences, there prevails a conventional lie concerning the "weight of the evidence," judicial impartiality, and the imperative-

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ness of strict and rigorous thinking. But the situation obtains wherever human beings reason. One need recall only such events as the disputes as that over the guilt of the Germans for the Great War; the crusade of Catholic Truth Society to vindicate "Catholic Truth" against other kinds, the controversies which characterize all the sciences, including mathematics, and are essential to their procedure. So far as I can see logical technique can be identified and abstracted only in discourse from its organic context in the activities of the psyche. That is, it can, like everything else, be symbolized by words. But as an actual component of the events of reasoning it can no more be cut off from the residual psychological processes with which it interfuses than can the movements of the limbs from the activities of the brain and the endocrine system.

Thus, it is no more possible to segregate "scientific method" from "psychological activity" than the techniques of any other, "practical," walk of life. The psyche even when split works as a whole, whatever its field. Those who declare that it does not, and point to the customary division between "theory" (where things show themselves in Reason's "cold dry light") and "practice" (where they heat up the will and the passions), are unconsciously attributing to the psyche the traits of a special field of its action.

Consider the field of the sciences. That part of it which is not plant, machinery, and tangible stuffs to put through the machinery, is language and computation. The whole assemblage is focussed at some particular theory, dogma, event, which a particular man or company loves enough to endeavor to establish and maintain or hates enough to seek to overthrow and demolish. To gratify the feeling, the assemblage is organized in a dynamic system which takes up some stuff, manipulates, tranforms, and measures it, and sends it out in the form of neat equations, as manufactured goods are sent out done up in orderly packages. In the field of mathematics, again, the stuffs and machines of the physicist, chemist, and biologist are lacking: it is a field composed of symbols only, and the mathematician's skills are more like the pre-industrial craftsman's or artist's than the industrial worker's. Though machinery can perform many of his operations, his art remains still a "mystery," as the scientist's does not. The same thing in perhaps a greater degree applies to the logician. The stuff with which these craftsmen work is symbols, language purely. Beside the materials and tools used by scientists and business men, they look so tenuous as to feel imponderable.

This is the reason, and the sole reason, for distinguishing the manipulation of these from those as "theory" from "practice." Not because one is contemplative, the other active; one detached, the other enjoying all the passions that move mankind. The lives of

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mathematicians and logicians and scientists declare otherwise. Health, disease, love, hate, jealousy, emulation, hope, fear, and indigestion enter into the processes of rigorous logic no less and no more than into the rest of life. And *vice versa*. Logicians themselves sometimes realize this. So F. H. Bradley, one of the greatest of them, testifies: "In my actual reasonings I, myself, certainly have never troubled myself about any logic." He confirmed an attitude which the great David Hume himself advocates. "Where Reason is lively," Hume declares, "and mixes itself with some propensity, it ought to be assented to. Where it does not, it never can have any title to operate upon us." One might add, "nor any power." For without the intervention of preference, the parity of systems is the whole lesson of Pure Reason. Buridan shows this with his heroic logical Ass. Kant shows this by his array of *Antinomies*, and to Hume it was so explicit that the one and only remedy that he could offer against scepticism, which he called a malady, was "carelessness and inattention." In contemporary speech, the remedy is to let oneself live, to let propensity have sway, to take up the options experience presents, to decide, to choose. Mr. Santayana says, defer to animal faith.

17. In view of these considerations, what more can be said to account for the honorific position of Pure Reason? I am inclined to the opinion that it is a survival, retaining, like royalty in England, an esthetic hold upon the psyche. The assurance which the psyche draws from its formal ultimacies is undoubtedly an operative cause, but it blesses too limited a section of the population to be a sufficient one. The adequate cause is to be discerned in the honor and dignity pertaining to the privileged classes among whom its practice started and has been largely continued. The bias of professional logicians and philosophers who, following the emulative precedent set by Plato and Aristotle, glorify their own trade, is natural enough and may be discounted. But the professional practitioners of Pure Reason were pensioners upon the bounty of the rich and great, and practiced it for their edification and entertainment. The rich and great practised it not for a living, but because they could afford to, because they were at leisure. Till the middle of the eighteenth century it was their exclusive prerogative, an honorific and to-be-envied diversion of the leisure class, like game-hunting, fighting, and love-as-a-fine-art. Pure Reason, in a word, was honorific because it was one of the ways in which the more honorable classes of mankind—churchmen, landlords, and other receivers of free income—passed the time. Sure of far more than bread and bed, their curiosity could be "idle," their reason "pure and cold"; they could contemplate God, argue about universals, play at chess or cards, and otherwise practise

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rigorous logical thinking. That not many used this way of passing the time with the distinction of the professionals they supported is true. But are there ever many who can compass a distinguished exploitation of a way of passing the time?

Where Pure Reason ceases to be a prerogative of the leisure class, it ceases to be pure—and thereupon ceased to be sterile. Its conceptions, being maculate, are fruitful. One need only inspect the often-mentioned intimacy between the sciences and industry. This has brought Reason down into the mud and rubble of the workaday life. It thrusts into the foreground the living scene that calls forth the activities designated by the "laws of thought." Amid these actualities the laws establish themselves in no way as principles of the eternal structure of the nature of things, in every way as tools and stratagems of the heart of man, trying to maintain his life amid those things. Already Heraclitus, already Hegel, had taken note of the fluidity and contradiction at the very heart of the things: Heraclitus had sought to overcome it with the Logos and made of change a circle ever-returning on itself; Hegel had endeavored to do it by identifying the contradictories, and raising the flux into the principle of its own rationality. Neither device was adequate to manipulate and control the actualities it envisaged. These are, as William James says:

> given to each of us in an order so foreign to our subjective interests that we can hardly by an effort of the imagination picture to ourselves what it is like. We have to break that order altogether,—and by picking out from it the items which concern us, and connecting them with others far away, which we say "belong" with them, we are able to make out definite threads of sequence and tendency; to foresee particular liabilities and get ready for them; and to enjoy simplicity and harmony in place of what was chaos. . . . It is an order with which we have nothing to do but to get away from it as fast as possible. As I said, we break it into histories, and we break it into arts, and we break it into sciences; and then we begin to feel at home. We make ten thousand separate serial orders of it, and on any one of these we react as though the others did not exist. We discover among its various parts relations that were never given to sense at all, and out of an infinite number of these we call certain ones essential and lawgiving, and ignore the rest. Essential these relations are, but only *for our purpose*, the other relations being just as real and present as they; and our purpose is to *conceive simply* and to *foresee*. Are not simple conception and prevision subjective ends pure and simple? They are the ends of what we call science.

This "breaking" of the natural order, this linking of the remote and separation of the near, this terminal "simplicity and harmony," this making of these arts and sciences, are accomplished however by the techniques we call laws of thought. They are not descriptions of the world, they are methods to alter it. If things were as they say things are, the saying never could have been pronounced. If

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identity were not constantly challenged, attacked, and lapsing; if, as Hegel says, everything were not at the same time its own other, no law would have arisen to affirm identity. If being were not a transition, if things were existentially complete, and not either coming to be from something else, or dying away into something else, no law would have been called for to deny the unity of being with non-being and to hold fast to the preferred being. . . . If the middle that the law of excluded middle excludes were not continuously bobbing up in the stream of experience, how could such a law have any meaning whatever? What sense, to exclude that which does not intrude?

Actually, we nowhere, not even in logic or mathematics, encounter an unambiguous identity, a this-and-no-other. We always think by selecting from a compenetration of thises, by identifying, by drawing out, by clinging to; by strengthening, by confirming, by validating the precarious This, by repelling the inexorably invading Other. The activities which these expressions name are passionate when they occur. But they constitute the anatomy of all reasoning, with its evidence and proof, its inference, its refutation of alternatives and objections. The "laws of thought" sum them up. Far from presenting themselves as the principles of the rational structure of reality, they present themselves as devices by whose means a structure is set up, within reality, determined to some humanly important center of reference. For experience knows no identities; it knows only identifications. Everything both is and is not; everything becomes and ceases. The psyche's aspiration goes out in an endeavor to set up fixities within the flux, to preserve those made identities, to keep on the upper side of the precarious equilibrium of life. The psyche's best achievement is a top-like motion which presents an illusion of standing still at last and is called consistency. What are all our cultures but diversifications of that central impulsion, foredoomed modes of overcoming the flux, changing even as they labor against change?

Foredoomed. Because the flux is not to be overcome. If it were, mankind would have no history, the present no future. On this account, the trend of those modes of experience I have been calling Pure Reason is a hopeless one. For it is compelled forever to return upon itself, and imagines, so returning, that it has found eternity. The Reason at work in the life of reason is more reasonable. It acknowledges that rationality can never be a predicate of all things, or even of many human things. It recognizes that everywhere a *more* always sticks out, an *other* always intrudes; that there is a warfare to man upon earth, and to the earth itself. It works for peace without victory; its ways are all toward compromise and adjustment; its proceeds, because it can not otherwise, by subduing

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the laws of thought to the maxim of "live and let live." It is significant that the English usage of our time makes synonyms of "be reasonable" and "have a heart." To be reasonable or to have a heart is to forego consistency and acquiesce in tolerance; to acknowledge the pervasive mingling and clash of identities which is the soul of contradiction; to accept the excluded middle as at home in the very center of the inner shrine. To be reasonable or to have a heart is to recognize how reality is everything which the laws of thought preclude; how the laws of thought are special ways of life which reality in the end obliterates.

The notation of this conflict at the very core of the psyche may well conclude this essay.

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## A NOTATION ON THE PROBLEM OF THE PAST—WITH ESPECIAL REFERENCE TO GEORGE HERBERT MEAD

THE past has just recently come to the front as a problem. Upon some of its metaphysical and epistemological aspects such writers as Holt, Laird, Russell, Alexander, Whitehead, Broad, and Burtt have touched, while the Dewey-Lovejoy controversy accentuated certain logical considerations. More recently the late Professor George Herbert Mead in two public utterances brought his unique analytical procedure to bear upon it, which resulted in a more fully developed statement than hitherto expressed by philosophical contributors. Within a limited space I wish to sketch just one of the considerations to which this problem is entitled in the interest of better intellectual treatment and destiny.

Mead devoted a considerable portion of the Paul Carus Foundation Lectures [1] to the nature, the form, and the function of the past. In this statement the nature of the past is that of the conditioning of the present; the form of the past is that of a cognitive structure in the present; and the function of the past is that of a "chronicle" which is seen to lead up to, and thus explain, the present. Mead's conception of the form of the past furnishes the approach to this article. His contention was that the only past with which we are conversant is that of our cognition. This past is not a static metaphysical structure of such events as are said to have happened; for this structure, if it exist, we are unable to reach with our present equipment, and it has, therefore, no reality to us. Our past, any past of which we can conceive, is a construction of intelligence; this construction derives its characters from the present in which intelli-

[1] *The Philosophy of the Present*, Chicago, Open Court Publishing Co. 1932.

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gence is operative, and in these characters is projected out from the present. The present features variations and changes, as successive situations are unfolded; and the variations are reflected in corresponding changes in the form of the accompanying past. The variations which our pasts undergo are in accordance with our individual development, our increasing historical insight, and our advancing scientific achievements.

This phase of Mead's treatment of the problem of the past brings into view a distinction which I am urging, not from sheer love for philosophical distinctions, but because the failure to make it up to the present time seems to be responsible for much inadequate thinking with reference to this problem. The distinction to which I refer is that simple one between the metaphysical and the epistemological aspects of the problem; and the simplicity of the distinction makes it all the more urgent. In such writers as Alexander and Broad matters identified with these aspects are under discussion; nevertheless, the distinction seems to be disregarded, with the consequence that the outcome is less clear.

From the standpoint of the problem of the past the distinction may be urged somewhat as follows. The metaphysical aspect of the problem directs attention to the reality, if any, which can be ascribed to the past *as existence,* while the epistemological aspect presents the reality of the past *as* a means or field of *orientation.* The answer to the question, can both of these realities be predicated of the past, rests importantly upon the view of reality entertained by the individual thinker who seeks the answer; a tentative working definition is, therefore, desirable. Reluctantly hazarding the appearance of presumptuousness, I suggest a workable definition: Reality is that which functions in a reference system, including the system itself. This tentative definition does not equate reality with existence; it merely ascribes reality to the various reference systems and their functioning factors within the realm of existence. Each system features its own realities; but the realities of, say, an electro-magnetic system are not the realities of a chemical, a biological, or a logical system. A given particle of existence may relate various systems by being a part of each; but its reality in each of the systems differs with and is determined by the system in question; and as thus considered the various realities of the given existential particle do not overlap but remain distinct in each system. In the logical system of tables and not-tables, the logical reality of not-table is not the domestic reality of a comfortable chair; the realities are distinct, though they are aspects of what we may regard as one spatio-temporal occupation. Now, the genius of the metaphysical system is the actuality and structure of existence, and its realities are determined in these terms; the genius of the epistemological system

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is the possibility, implications, methods, and consequences of conscious orientation, and accordingly the realities of this system are determined by the characters of such orientation.

## I

We may begin our brief consideration of the metaphysical aspect of the problem of the past by quoting the following propositions from the opening sentences of Mead's Carus Lectures: "Reality exists in a present. The present, of course, implies a past and a future, and to these both we deny existence." Mead regarded existence as fundamental to any category of reality, including the metaphysical; the just-quoted propositions, thus, deprive the past of its metaphysical reality.

Mead was not the first thinker to whom this denial had occurred. Early in the modern period Hobbes maintained that the present *alone* has "being in nature," and that the past has being only in memory.[2] The latter half of the last century found Lotze suggesting that the only point of reality of time is the present, while the past is "an endless but imaginary arm."[3] More recently Laird has asserted that "the past does not exist now";[4] and with a slightly different twist Alexander would have it that "the past event . . . does not exist now," though its reality "is to have existed then."[5] But there are thinkers of an opposite tendency, among whom may be mentioned Holt, whose "metaphysical manifold" consists, in part, of the actual facts or events at the point where they are intersected by "the recalling consciousness";[6] here the intersecting past events and present consciousness are realities, each of its own kind. But the outstanding contention for a metaphysical reality of the past is probably that of Broad, for whom the happening event never ceases to exist.[7]

The position presented in the above-mentioned Carus Lectures may be epitomized as follows. Reality is found in the natural process. The focus of this process, that is, the point at which nature displays its processional character, is the happening events where characters emerge and active existences continue or break. This field of emergent events is the present; the structure of the present is the emergent events, and this structure is basic to time itself. Thus, by this definition, the present becomes the seat of reality. Now, if reality is identified with the process of nature, and if the actuality

[2] *Leviathan*, Part I, Chapter 3.
[3] *Metaphysics*, Section 65.
[4] *A Study in Realism*, page 50.
[5] *Space, Time, and Deity*, Volume I, page 71 (New Impression).
[6] *The Concept of Consciousness*, pages 179, 182, 233, etc.
[7] *Scientific Thought*, pages 66, 69 (Reprint of 1927).

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of this process is in the active and emergent happenings, and if these happenings define the scope of the present, then, of necessity, that which is not in the present because it is not a happening because it is not in the actuality of the process, must fall outside the field of reality. The former stage of the now on-going process is no longer in activity; it has ceased to exist as process. To say that the former stage is left behind or is past means that its reality ceased when the happenings of that stage expired. The metaphysical reality of the past must, therefore, be denied. So far Mead.

The concept of time is an abstraction which has developed out of naïve racial habits of thinking; and it has continued to retain the large divisions inherent in this untutored thought, namely, the past, the present, and the future. It is obvious that the concept of time is based on realities; but upon consideration it seems equally obvious that these basic realities have taken on appearances in present-day thinking which demand a reconsideration, if not a revision, of the concept. The origin of the concept is in the recognition of distinctive features as they occur in the activity of the natural processes; but to extend the concept beyond this existential activity on the tacit assumption that its extension is supported by the same existential value as its origin, is, it seems to me, a highly questionable procedure. We are here confronted with the necessity of distinguishing between the *concept* of time and that which I for the purpose of this distinction shall call *time itself*.

By "time itself" I mean the metaphysical reality of time, that is, its existential structure. The natural processes are characterized by activity and direction. The present has been defined above in terms of activity; it is the featuring of distinct and distinguishable characters which mark the advance of the processes. "Time itself" is the direction taken by these activities; it involves the durational relation which obtains between the distinct features in the active processes. That is, the nature of time is found in the direction of nature's processional activities; or, differently stated, time is the natural processes in their direction. Time and nature's processes are not two metaphysical existences; on the contrary, the direction of the activities of the natural processes is that which intelligence calls time. The reality of time, then, is as actual as the reality of the natural processes in their direction; but the structural activity and direction which constitutes "time itself" does not admit into its constitution the past or the future. This inclusion has been effected by the *concept* of time, an inferential extension of present reality beyond its actuality.

The metaphysical reality of time, then, is the metaphysical reality of the direction of the natural processes. The formulation of an idea,

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the growing of a plant, the deposition of sediment in the river's bed, the flight of the comet across the sky, are instances of the natural processes whose directions constitute the reality of time. The staging of these activities is that which we identify as the present, while their direction is "time itself." Now, any present stage of an action may imply one or more of its previous stages; but this implication can not safely be equated with metaphysical reality as long as the positive grounds for such reality do not seem to be in evidence. The so-called earlier stages of an activity do not belong to metaphysical reality, as here understood, and, but for our inferential constructions, we could not even think them because of their absence from the active process. The completion of an activity also marks its extinction; as extinct it has lost its metaphysical reality. In terms of the reference system—the completion of the activity renders it inaccessible as a functioning factor of a metaphysical system in which the structural characteristics of actual existence is requisite to reality, where these characteristics are found in activity and direction. To say that the completed activities of the earlier stages are past, is, from this viewpoint, tantamount to the declaration that they are not a part of metaphysical reality.

## II

We now turn to the epistemological aspect of the problem of the past. It is this which Mead sought to stress, and to which he devoted a minor part of the first and the major part of the third Carus Lecture. In the latter he delineated the biological background of the cognitive structure of the past. A rapid review of these analyses may be phrased somewhat as follows.

At the lowest level of life the organic form selected "its appropriate stimuli" in accordance with its needs; this selection was due to certain sensitivities. The primary and mechanical activity of this low level advanced into a higher stage, when the animal began to react to its own organic processes, whereby its organism began to become a "part of the world within which it lives"; this was the level at which consciousness appeared. The further advance into a third stage came with the development of a neural mechanism of the "important distance centers"; at this point delayed responses began to appear as the organism instituted control of its activities. This stage was the field within which ideation arose; there was a "separation in the experience" of the organism between the content of the distance stimulation and the immediate response to it. Distance stimulation was identified with distance experience, and we had the rise of the perceptual object, that is, the object about which we could conjecture, in Mead's own words, "what we can do to it or with it or by way of it, or what it can do to us." Imagery developed when the

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organism, in responding to an object, also responded to tendencies and results of previous responses. Ideation was further developed into universals, when the organism evolved attitudes which selected "characters of things" by detaching them from the situations within which these objects originally belonged.

Mead now completed this analytical perspective. Ideas are in the present; but they "refer beyond themselves," and in this reference beyond the immediate present of the organism the things referred to are given characters with the value of the things themselves. Thus the outcome is that the life processes produce organisms so constituted that they reach out beyond themselves; these organisms seem to require a larger environment, and they satisfy this requirement by reaching beyond their own immediacy into spatial and temporal extensions which are built up and adorned by characters found in their own immediate present. Accordingly, the historian is seen to revise his account in order to correct errors in previous accounts; the historical past is in constant process of revision. The physical scientist is engaged in "finding rational order and stretching it back, that he may previse the future"; but this rational order meets with constant modification as necessitated by the success or failure of current hypotheses. In the case of memory we have an instrumentality for that specific orientation which is the demand of the individual present. Thus, to the "minded organism" the past is the satisfaction of the demand for complete rationality; the organism requires the constant extension of its horizons; it makes this extension; and this "larger environment" takes the form of a cognitive structure, in which a complete rationality is projected as the background of the present.

Leaving Mead's account, the matter may be stated in terms of the reference system, as already suggested above.

The situation of consciousness is the field in which the individual, by means of intelligence, becomes identified with the on-going processes. By intelligence is meant, simply, the ability of organic adjustment with a view to better orientation. Intelligence is a phase of organic activity; it is organic activity developed to the point of a peculiar ability to make adjustments. These adjustments are effected by means of environmental characters, such as sense data, and the constructs which result from them, such as images and ideas. The characters are objectifications of this organic activity, and the constructs are the tendencies to reproduce these characters in a subsequent similar activity. Intelligence, then, is the distinguishing mark of the situation of consciousness, and this situation is definitely a behavior or activity situation.

Intelligence exhibits the ability to construct references and reference systems, which extend beyond the immediacy of the existing situation of the organism. An immediate organic situation with its

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environmental characters is also productive of the constructs of intelligence. The environmental characters are, of course, the fundamental features of the situation; the constructs are, in a sense, the additional elements furnished by the organism, which elements may either shadow the characters, as found in any familiar percept, or be a separate objectification thrown off by the characters, such as a memory-object or as a so-called picture produced by literary skill. Whatever the particular construct of intelligence may be, it always seems to contain a reference to something other than itself.

Intelligence being that peculiarly developed organic activity by which the individual becomes identified with the on-going processes, it affirms the object of this reference of another and not-present stage of these same processes. The individual is identified as being within that same larger totality of actions and patterns, within which also the implicit reference of the construct belongs. The object of the reference, however, is inaccessible, as its locus is relegated to an earlier stage in the process. What remains is the symbol of the allegedly original object; this symbol is a construct which becomes blended with similar constructs as the processes advance, with the result that its exact original lines tend to blur and even to disappear. But the validity of the modified construct is established by its functioning stability in the present organic situation.

The situation of consciousness, then, involves an extended continuity of processes, with which intelligence identifies itself. As such it exhibits itself as the field of orientation. Intelligence environs the immediate situation with a larger system; and this system extends beyond the metaphysical present. The reality of this system is determined by its ability to furnish a background for present activity and a schema of existence which will satisfy intelligence. It is a reference system of which the organic activities of the natural processes are the pivotal factor.

Such a reference system is the past, which portrays an order, or orders, leading up to the pivotal factor. The pastness of any item is established by its relation to or incorporation in the system in question. The reality of any system must be found in its pivotal factor, and the reality of the past must have this pivotal factor as its corner-stone. If the system, or factors within it, fail to fit, or function with, the pivotal factor, the system, or the factors, as the case may be, is said to be "unreal." The epistemological reality of the past, then, is not found in a reproduction of situations which are alleged to have had existence; for such reproduction is impossible. Its reality is found in the reference system which is symbolic of earlier situations in the processes which are still going on, and which reference system is in functional continuity with the present organic activity.

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It is this very simple distinction between the metaphysical and the epistemological aspects of the problem of the past which seems to me important to bear in mind in future discussions of the problem. The recognition of this distinction will cause hesitancy in accepting such statements as that of Laird, that memory is "the mind's awareness of past things themselves;" or such as that of Alexander that the past object somehow can become "attached to or appropriated by myself." Such expressions seem to carry the implication that the past, that which supposedly happened in or belonged to earlier stages of the processes, is a metaphysical reality accessible to present activity. From the viewpoint here presented this is an error. The earlier stages of the processes are not accessible to present activity or investigation; they are not something which we can reach. The only past with which we appear to be conversant is our cognitive structures, which I have called epistemological reference systems. Epistemological reference systems are of various kinds, but they all are in the present; and we call some of them "the past" in order to distinguish their function from that of other systems, such as, for example, the future.

There is in Mead's position no denial of the reality of time by drawing the world into a non-temporal ideality; his concepts of passage, emergence, and the processional activity of nature safeguard time. There is, however, an explicit denial of a past as a metaphysical entity independent of the present. Any given past is the past *of* a definite present. This past arises with the activity-form of its present. The quantitative determination of the present is as yet inadequate, for developments emerge which can not be, and could not have been, predicted. The earlier stages in the processes leading up to the present can not, therefore, be regarded as the past of these new emergents of the space-time-energy compound. What *is* the past, on the contrary, is that cognitive structure or system which this present extends back of itself to account for its own peculiarity and emergent character. This is that revisable past, which—yesterday, today, and for ever more—*never* remains the same.

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## BOOK REVIEWS

*The Nature of Physical Theory: A Study in the Theory of Knowledge.* VICTOR F. LENZEN. New York: John Wiley & Sons, Inc. London: Chapman & Hall, Ltd. 1931. xii + 301 pp.

Professor Lenzen has the distinction of having had specialized training in both physics and philosophy, and is thus unusually fitted

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to write a book on this subject. In the present work it was partly his purpose "to provide philosophical students of science with a rigorous systematic exposition of physical theory," and consequently he has "used a minimum of mathematics." At the same time he has "developed the subject with sufficient detail so that the book will be useful also to physicists who are interested in methodology and systematic construction. The book thus stands between the popular expositions of physics and the detailed treatises for experts" (*Preface*).

In this review it is manifestly impossible to go into any mathematical details. Of course a knowledge of the calculus and of differential equations is necessary for following Lenzen's exposition in detail; and when he comes to deal with the general theory of relativity and with quantum theory, the reader has to have an elementary knowledge of tensor analysis and of matrix mechanics. That Lenzen makes this demand upon his reader is not his fault. We have reached a stage where the student of the philosophy of science must equip himself with knowledge of at least the elements of a number of mathematical disciplines. I shall touch only those parts of his book that any intelligent reader can understand.

First, what is " a physical thing"? "A fundamental property of a thing is that it has **aspects**. If I look at a book upon the table I experience in sensation a partial aspect of the book. A thing presents different aspects from different points of view. We can describe an aspect by saying that it is colored, that it has a certain shape, that it is smooth, etc. Knowledge of a thing is ultimately based upon acquaintance with aspects of the thing. However, the concept of thing implies more than the concept of given aspects; there are also possible aspects. Thus while I am merely seeing the book some visible aspect is given, whereas the tangible aspects are merely possible. Hence a thing may be characterized as an entity which has given and possible aspects. . . . An aspect is a union of particular qualities, complexities and relationships" (pp. 15–16). "A physical body is a class of aspects which are or can be given to some mind." "The problem of physics is the description of the characters and relations of aspects which may be represented by numbers." "The objectivity of the physical order in grounded in correlations between aspects given to different minds" (p. 6).

From this it appears that "an important relation to which aspects may be terms is the relation of objects to subject. The discussion of this specific very pervasive relationship raises the problem of the status of aspects with respect to their dependence on, or independence of, being given to some mind. . . . I do not wish, however, to discuss this question in the present book; it appears to me that it is possible

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to construct science without answering, or even raising, the metaphysical problem. I have endeavored to use the term aspect without giving it a subjectivistic or realistic interpretation. . . . We can describe given and possible aspects, or elements, without considering the problem of their subjectivity or independent reality. The systematic description and correlation of aspects of reality is the problem of science.

"Now the reference to the metaphysical problem has provided us with additional concepts for the expression of the criterion of physical reality. The fundamental principle is that in the construction of a physical theory one employs a subjectivistic criterion of reality and assumes a realistic attitude. A thing is real because it is an object of possible experience; yet one describes it as if it were independent of experience, although it may be dependent upon experience for its reality. On account of these apparently contradictory factors it is difficult to expound the theory of aspects without making it appear that one is either a subjectivist or a realist. I do not wish to base physical science upon subjectivism or realism because in my view a theory of aspects is merely preliminary to the metaphysical problem; a metaphysical subjectivism or realism can be superposed upon physical science" (pp. 4–5).

One of the great merits of the book is that it recognizes that there is a metaphysical problem and yet successfully presents physical theory as impartial with regard to the solution of this problem. The secret of this success is found in the fact that according to Lenzen physics deals with measure-numbers.

Physics is a science whose progress takes place by three stages. First there is experimental physics, whose business it is to measure distances between space-time coincidences; its "results are sets of assignments of numbers to descriptive functions." Next comes theoretical physics, which takes these results and from them discovers "functional relations between the variables the values of which are the numbers." Last comes mathematical physics, which studies the "implications between these functional relations and others" (p. 40). Thus the whole task of physics consists in securing numbers by measurement and in discovering the mathematical relations between these numbers and also the mathematical implications of the discovered relations. What is measured is something found in experience: this, I take it, is what Lenzen means in saying that "in the construction of a physical theory one employs a subjectivistic criterion." What is discovered besides the measure-numbers thus obtained is a vast array of mathematical relations between these numbers. The assumption that these mathematical relations point to something not numbers is what I take him to mean when he says that the physicist

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"assumes a realistic attitude." How that something is to be conceived is what I take to be "the metaphysical problem" that "can be superposed upon physical science."

A basic feature of the book is its emphasis on the method of successive approximation resulting in "successive description." "All qualities are relative, for example, the redness of a thing is functionally related to other properties. Similarly, the physical quantities which are assigned to physical objects depend upon accompanying conditions. The definition of a fundamental quantity, therefore, must proceed by successive approximation. We first define a quantity, that is, we describe a method of assigning a number to a property, upon the assumption that conditions as estimated qualitatively are invariable. Then we discover laws correlating the physical quantity and qualities. The laws thus enable us to define quantitatively to the first approximation the conditions under which the quantity is defined to the second approximation. For example, we may define the length of a body as the number obtained by an operation with a standard rod whose qualitative temperature is that of ordinary conditions on the earth. One then discovers a correlation between the length of a rod and its hotness or coldness. We may then define a scale of temperature in terms of the variations in length of some standard rod. This enables us to define quantitatively the conditions of temperature under which the standard of length is defined to the second approximation.

"Now in the development of a system of physical theory the definition of the fundamental quantities undergoes a change. The fundamental quantities are first defined independently, then laws are discovered which can be transformed into implicit definitions of the quantities. . . . The temperature of a body was first defined in terms of a thermometer. . . . Then the second law of thermodynamics was discovered and can be transformed into a definition of temperature. Thus in the construction of a physical theory there is a union of definition and experimental law. In order to improve the synthetic unity of a theory one is led to change the fundamental definitions so that experimental laws are transformed into definitions and definitions give rise to experimental facts. Fundamental and derived quantities may thereby change places. The ultimate goal of physical theory is the implicit definition of all fundamental quantities by a set of postulates" (pp. 46–47).

There is an interesting section (pp. 42–45) devoted to the question of the origin of physical concepts. The concepts of sense qualities and of space-time coincidence are "abstractions from experience." "The assignment of numbers by the operation of measurement seems to be a process of invention. However, once the standard or co-

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ordinate system has been selected the assignment of the number is by the observation of coincidences. The concept of a relation between a number and an object is defined by an experiment and is abstracted from experience in a secondary sense. . . . Concepts play a double rôle. Those concepts which have been abstracted from experience are descriptive of previous experience; they serve as principles of order for future experience. Such concepts are *a posteriori* in their origin and *a priori* with respect to the interpretation of future experience."

One will find in the book a treatment of all the important concepts of the classical, the electrodynamic, and the geometrical types of physical theory. From the nature of the case the discussion of these concepts is mathematical. The last two chapters are devoted to the concepts of substance and causality. Unfortunately space does not allow me to take up these matters.

Taken all in all, this excellent book supplies a need of the philosopher who has some mathematical equipment, the need of a conspectus of the methods and the accomplishments of physics. It is refreshing, after having been bombarded of late with popular—devilishly popular—accounts of the nature of the physical world, to be led by a physicist to understand the nature of physical theory. After all, the nature of the world of the modern physicist ought to be defined by the nature of the theory by which he discovers that world. Speaking only for the philosopher—of course I can not speak for the physicist—this book with its mathematical approach deserves to be studied along with Bridgman's *The Logic of Modern Physics* with its experimentally operational approach to the philosophy of physics. Until the philosopher combines the results of these two approaches to modern physics, he is not in a position to avail himself of modern physics in his metaphysical speculations.

EVANDER BRADLEY MCGILVARY.

UNIVERSITY OF WISCONSIN.

*Philosophy of the Sciences:* the Tarner Lectures for 1931–1932. F. R. TENNANT. Cambridge: The University Press. 1932. ix + 191 pp.

It is a surprise to find such a book as this issuing from Cambridge. One has come to think of Cambridge as the home of a special way of thinking on philosophic matters, a way in which logico-mathematical analysis and attempts at rigorous demonstration are conspicuous, and psychology and the historical method play little part. Dr. Tennant abjures this way from the beginning. He makes psychology the fundamental science, contends that even the theory of knowledge must adopt the historical method, regards logistic as on the whole a

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sterile exercise, and denies that certainty is to be had anywhere. One would like to know the feelings with which Cambridge listened to its newest Tarner lecturer.

Dr. Tennant's conclusions will be clearer from a résumé of his argument. The chief task of a philosophy of the sciences, he thinks, is to distinguish the kinds of knowledge the various sciences are pursuing, and to range these kinds in an order that will make plain their relations and comparative worth. Is there any science that can do this for itself and all the others? Yes, there is one; and that science is psychology. For it is psychology that by its analysis discloses the elements we have put together in our supposed knowledge, and by its genetic study shows why we have accepted one arrangement of them as giving knowledge rather than another. For example, it takes the two kinds of knowledge that pass as surest, the perception of what is given in sense and the perception of the self-evident, and shows that neither of these can be accepted at face value. For sense-perception, if taken at a level where only sensation enters in, gives nothing that could be true or false; and if taken higher, it is full of interpolations that have been read into it by the mind. These can be exposed for what they are only by the psychologist. Nor does the other kind of certainty come out better from his scrutiny. For the flash of insight in which we grasp a self-evident connection may be, and commonly is, nothing but an association that is highly familiar, or a chain of reasoning with some parts telescoped, or something else that is merely masquerading as certainty, and whose mask the psychologist alone is in a position to tear off. Psychology is thus the science of the sciences, in the sense that it alone can serve as critic of its own presuppositions and of what other sciences accept as knowledge.

But by "fundamental," Dr. Tennant points out, we may mean something else. We may mean by the fundamental science one that provides raw material for the others to work on. And in this sense it is history that is fundamental. For all knowledge in the last resort comes from that flux of personal experience which in its wholeness belongs to history alone. If we take history, then, as the soil of the other sciences, how are we to account for its having produced so various a crop?

There are two ways in which its relation to the other sciences may be described. First, these may be arranged in order of remoteness from their concrete base. Thus biology leaves out less of this base than does chemistry, chemistry less than physics, physics less than mathematics, and this again less than logic. Or, secondly, they may be classified by the sort of explanation they aim at. Logic, since it leaves out all but the identities and differences of things, seems

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to have arrived at the purest and clearest form of intelligibility. In the other sciences this purity is more and more muddied. Physics, since it deals with a body's motion, must introduce into its explanations the idea of substance; other sciences, and perhaps physics too, must introduce causality; biology goes farther and requires the idea of final causes. Thus we have two modes of classifying the sciences; and it will be observed that the order we get from them is the same. Certainly most scientists would not find in this any coincidence. They would say that abstractness and intelligibility go together, and that the sort of grasp achieved in logic and mathematics is the best knowledge we can hope for.

This Dr. Tennant denies. He seems to be moved to this denial by three considerations. First, he thinks it absurd to say that the real world is indefinitely rich and various and that the aim of science is to know this world, yet the highest kind of knowledge is that which tells us least about it. Secondly, he is inclined to think that logic and mathematics are not knowledge at all. They provide a set of rules for what we may call the game of thinking, but there is no guarantee that these hold beyond the game itself. Thirdly, their purity is largely mythical. One after another, the Kantian categories have turned out under psychological scrutiny to be only "habits of thinking that have proved useful *ad hoc*." Logic, he believes, either reduces to tautology, "as one eminent logistician affirms to be the case," or else it must make "the appeal to experience which a pure science forswears." If this appeal is admitted, as Dr. Tennant thinks it must be, then the whole of knowledge will be revealed as of one piece. It will be an attempt, in different provinces, to place upon sense-data a construction that works. That is all the knowledge we can hope for, since "between science and the world stands human nature." The fundamental categories of all kinds of explanation are drawn from the nature and situation of the mind that knows; the idea of substance is suggested by the permanence of our own body; the idea of causation comes from the experience of will; Occam's razor from our desire for simplicity and ease. The vision of the world as an embodiment of reason through and through is thus an idle dream, not only because the flux of sensation from which we start can never be distilled away into concepts, but also because knowledge is a projected shadow of ourselves and a "pragmatically verified interpretation is the nearest approach" to the world outside us.

Dr. Tennant is an eminent theologian, and he devotes his final lecture to the place of theology among the sciences. He not only gives it a place unhesitatingly; he regards it as the culmination of the whole scientific enterprise. He is quite ready to admit that in

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theology we are reading ourselves into the world, but his answer is in effect: What of it? Does not all science do the same? The only important difference between theology and the other sciences is that, as the mass of facts to be considered is so much greater, the certainty of its conclusions must be less. If we remember, however, that at best probability is the guide of life, its enterprise will appear neither illegitimate nor hopeless.

A book so courageously and carefully reasoned, and so willing to fight its battles on ultimate grounds is worthy of deep attention. Yet while admiring greatly the knowledge and skill with which the argument is handled, I remain unconvinced that its main positions have been made out. There is no space to discuss these in detail; I shall only indicate some of the points at which the case seems vulnerable.

1. I can not think Dr. Tennant succeeds in his attempt to make genetic psychology the final authority in knowledge. What justifies our believing something can not lie, in the last resort, in our perception of how we came to believe it. For if it did, this perception itself could be justified only by another perception in which we saw how we came to perceive *that*, and so on without end. Dr. Tennant believes that the genetic method has undercut this dialectic, but I do not think such simple straightforward logic can be argued away. In attempting to validate its own manner of explaining, the genetic method must itself assume as valid certain principles of explanation; if it does not assume them, it can not get under way; if it does assume them, it is circular. Of course to say this is not to deny that the method may be immensely helpful as a means of clearing one's vision.

2. I do not think Dr. Tennant is right, or even quite consistent, in saying that the principles of logic and mathematics are "thought but not knowledge." These principles are admittedly got from experience by abstraction; likenesses and differences are admitted to be "thrust upon us with a necessitation similar to that which marks sensation." Hence they would seem to supply knowledge of fact if any abstractions do, and it is hard to see why they should be set down as giving only "knowledge about the relations of ideas."

3. Dr. Tennant nowhere makes clear what he conceives knowledge to be. He is not a pragmatist; he does not believe that self-evidence reveals the structure of things; he does not accept direct apprehension, and does not believe that knowledge copies. His notion is conveyed in such phrases as that there is "relevance rather than identity or copying" between thought and its object, that knowledge is a "sympathetic *rapport*" with things, and that our constructions form "some version or function of the real." This is very dark

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indeed. It may be replied that if this very darkness is what the theory is insisting on, it can not be retorted upon it as an accusation. But then one's difficulty is this, that when the darkness is so deep, the claim to see light is hardly justified. If knowledge of the outer world is as precarious as Dr. Tennant suggests, how can we know it is even relevant? How can we know that such a world is there at all?

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## JOURNALS AND NEW BOOKS

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Sellars, Roy Wood: The Philosophy of Physical Realism. New York: Macmillan Co. 1932. xiv + 487 pp. $4.00.

Smith, Henry Bradford: Symbolic Logic. Problem and Method. Photo-Lithoprint Reproduction of Author's Manuscript. 31 pp.

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## NOTES AND NEWS

We regret to announce the death of Dr. June E. Downey, Professor of Psychology at the University of Wyoming, on October 11, at Trenton, N. J. Professor Downey was borne in Laramie, Wyoming, June 13, 1875. She did her undergraduate work at the University of Wyoming, and received the degrees of A.M. and Ph.D. from the University of Chicago. She began teaching at the University of Wyoming in 1898, and in 1915 she was made head of the Department of Philosophy and Psychology. She contributed to scientific periodicals and among her books are the following: *The Will Temperament and Its Testing; The Kingdom of Mind; Creative Imagination.*

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Under the general direction of the Società Filosofica Italiana, a new quarterly has appeared under the title, *Archivio di Storia della Filosofia.* The editor is Professor G. Perticone, (address, Via Ulpiano 20, Rome). The aim of the Archives is not only to publish the contributions of Italian scholars to the reinterpretation of the history of modern philosophy, but to make special studies of philosophical movements in other countries. The broad scope and distinguished character of the Archives is evident in the following contents of the first number: L'infinito cosmico e la meccanica celeste di Newton: *G. Tarozzi.* Caratteri e tendenze dell' idealismo in Inghilterra e in Italia: *N. Abbagnano.* Sulla teorie giuridica di B. Croce: *A. Poggi.* Problemi dell'odierna filosofia del Dirritto. Note e Commenti: *G. Perticone.* Note sulla cultura scandinava: *G. Bach.* Orientamenti della filosofia morale anglo-americana: *A. Ferro.* Recensioni e Notizie.

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Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 17. August 18, 1932.**

Intellectual and Moral Obligation. A. MYRTON FRYE.
Contingency and the New Era in Metaphysics (II). CHARLES HARTSHORNE.
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Vol. XXIX, No. 23. November 10, 1932

# The Journal of Philosophy

## ON HAVING IDEAS IN THE HEAD

THOSE of us who believe that ideas are made of the same kind of stuff as the rest of the world, and that this stuff can be most appropriately identified with the space-time order of physical nature, find our hardest and most notorious problem in explaining how the gobbets of stuff which are called ideas are to be located with respect to the rest of the world, and especially to those gobbets which are called the objects of the ideas. On one view, the ideas are, in typical cases, literally identical with abstract elements of the objects.[1] On another view, the ideas are not identical with elements of their objects, but are literally *parts of the brain* of the percipient organism.

The most conspicuous present-day protagonist of the second view is Mr. Bertrand Russell,[2] who believes that it is the only doctrine which reconciles the apparent facts of causality with those of perception. The theory is at bottom identical with the standard "two-aspect theory" of the text-books, and it has often passed, strangely enough, as "pan-psychism." With some such title it has been advocated recently by Mr. Durant Drake, Mr. C. A. Strong, Dr. Morton Prince, and others. It was consistently propounded at the beginning of the century by W. K. Clifford, and has just now been adopted, apparently from Mr. Russell, by Mr. A. S. Eddington to complete his account of *The Nature of the Physical World.* It has always been a natural resort of the materialist, who has taken the obvious course of identifying the so-called "psychic processes" with what the dualist considered merely correlated physical processes. In this capacity the view has been utilized, albeit without systematic consistency, by behavioristic psychologists—such, for instance, as K. S. Lashley and A. P. Weiss.[3]

[1] The word "abstract" is used in this paper in a sense perhaps somewhat stricter than ordinary. See "The Nature of Universals and of Abstractions," *The Monist*, XLI, 1931, pp. 583–593. It is probably unnecessary to say that the word "idea" is used in its antiquated but natural and familiar sense to refer to any content of consciousness.

[2] In his later works, *Philosophy* and *The Analysis of Matter* (both New York, 1927).

[3] A. O. Lovejoy and H. C. Warren have in different ways used against this type of behaviorism some criticisms similar to those we are to consider below. See Lovejoy, "The Paradox of the Thinking Behaviorist," *Philosophical Review*, XXXI, 1922, pp. 135–147, and "The Anomaly of Knowledge,"



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The doctrine has not gone unattacked, and within the last couple of years two critical realists, Mr. A. O. Lovejoy and Mr. J. B. Pratt,[4] have advanced the attack with singular unanimity and unprecedented vigor, the brunt of their assault being borne by Mr. Russell. The question is more than an isolated and academic one because Mr. Lovejoy and Mr. Pratt, for instance, see in it the very crux of their argument for psychophysical dualism, since they regard Mr. Russell's theory as the "last hope"[5] of physical monism; and because certain other philosophers—although not Mr. Pratt and Mr. Lovejoy—see in physical monism the last hope of realism in general. I still believe, in spite of the worst that our authors could do, that physical objectivism ("direct realism") is the most probable hypothesis; but if physical objectivism does have to be given up, I believe that a physical subjectivism[6] like Mr. Russell's is, literally, incomparably more probable than the psychophysical dualism of Mr. Lovejoy and Mr. Pratt. At present a certain emergency is indicated, not only by the duplicate force and enthusiasm with which Mr. Lovejoy and Mr. Pratt have collaborated, but by the solemn silence in which their *tour de force* has been received and by the apparent likelihood that it will be accepted as a well-established conclusion of modern philosophy.

I disclaim any officious desire to act as personal champion of Mr. Russell. My interest is only in the bare tenability of the theory itself in its simplest and severest form, and wherever Mr. Russell's form diverges from this pure type it forfeits the benefit of this advocacy. The critics of the theory, I think, are correspondingly interested to refute, not Mr. Russell *per se*, but this last and most intransigent variety of physical monism. To avoid excessive use and abuse of Mr. Russell's name I shall refer to the generalized form of the doctrine as the endocephalic hypothesis.

Now, the first, the simplest, and the chief of the arguments against the endocephalic hypothesis is that our percepts can not be in our heads because our heads are among our percepts. This argument was used by Bergson before Mr. Russell was in the field. "To make of the brain the condition on which the whole image [of the universe] depends is in truth a contradiction in terms, since the brain is by

*University of California Publications in Philosophy*, IV, 1923, pp. 3–43; and Warren, "The Significance of Neural Adjustment," *Psychological Review*, XXIX, 1922, esp. p. 484.

[4] A. O. Lovejoy, *The Revolt Against Dualism*, 1930, Chap. vii; J. B. Pratt, *Adventures in Philosophy and Religion*, New York, 1931, pp. 68–78.

[5] *The Revolt Against Dualism*, p. 256; and cp. p. 254. Hereafter I shall refer to Mr. Lovejoy's and Mr. Pratt's books as *Revolt* and *Adventures*, respectively.

[6] More commonly "subjectivism" means, as below, not just the theory that our ideas are private, but the theory that there exists nothing except our private ideas. The ambiguity is regrettable but in this place it is harmless.

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hypothesis a part of this image."[7] Mr. E. A. Burtt has used it against the materialistic subjectivism of the Newtonian *Weltanschauung*: "The world which I perceive and know is a world of which my body is a very small part. . . . It is not, and can not be, a world of ideas enclosed within my own brain or of responses made by my cortical centres."[8] So Mr. S. Z. Hasan in his study of *Realism* has admonished Mr. Russell that ". . . sensa, or the world perceived through sense, is not in the brain, but on the contrary, brain is in this world."[9] Mr. Lovejoy writes: "While we can not see our own heads, we can touch them and pass tape-measures around them, and . . . the other perceived objects are perceptibly outside *these* heads. My visual field extends far to right and left of the region occupied by my skull."[10] Finally, in lively dialogue, Mr. Pratt lets Socrates argue in his behalf against Mr. Try-Everything-Once. "My head is in perspective space? . . . And it is seen to be smaller than the mountains and the sky? . . . And they are inside it? . . . This cave, too, is actually inside my head? . . . And my head is actually inside this cave?"[11] The badgered Mr. Try-Everything-Once replies, "There is some misunderstanding here." I should think he might!

The answer to the primary criticism that our percepts can not be in our heads because our heads, and much bigger things than our heads, are among our percepts, is so easy that only a rather elaborate demonstration can show that it is worth making. The answer is that the endocephalic hypothesis is an epistemological dualism, and the whole point of an epistemological dualism is that our heads are *not* among our percepts. Only the percepts of our heads are among our percepts, and by hypothesis the one thing sure about a percept and its object is that they are not the same thing. The theory is in this respect *grundsätzlich* opposed to either variety of epistemological monism, namely, the subjectivistic theory that there exists in perception nothing but the ideas, and the objectivistic theory that there exists in perception nothing but the objects. On the subjective theory there exist only my idea of my head and (let us say) my idea of my house. Certainly the house-idea is not inside of the head-idea, and in some sense the head-idea is doubtless inside of the house-idea. On the objective theory, there exist only my real head and (let us say) my real house. Certainly the real house is not inside of the real head, while just as certainly the real head is, or may be, inside of the

[7] *Matter and Memory* (tr. by Paul and Palmer), p. 4.

[8] *The Metaphysical Foundations of Modern Physical Science*, pp. 315–316. Professor Burtt tells me that this passage will not appear in a forthcoming new edition.

[9] *Realism* (Cambridge University Press, 1928), p. 225.

[10] *Revolt*, p. 240.

[11] *Adventures*, pp. 74–75.

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real house. All that this discovers, however, is that Mr. Russell's dualism is incompatible with epistemological monism,—as it was expressly intended to be.

The endocephalic hypothesis, as a combination of physical monism with epistemological dualism, asserts, first, a real and extensive physical world in which there are real and physical heads, containing brains and attached to real and physical bodies which are in physical interaction with the rest of the world; and second, a system of physiological processes within the brains [12] which, by dint of physical and physiological causal conditions which can be fairly investigated by the physiological psychologist, embody more or less abstract, schematic, and symbolic *copies* of certain features of the world outside the brains and organisms—just as literally as a photograph can copy a movie actress, or just as conventionally as a map or a time-table can copy a railroad system. And according to the endocephalic hypothesis, our ideas, the content of our perceptual consciousness, are literally and existentially identical with these representative processes within our brains.

Now if we test our primary objection to the theory in the terms of the theory itself, which is the only significant way to test it, the objection has collapsed. The real house contains the real head; the real head contains the house-symbol; [13] the house-symbol contains (very possibly) the head-symbol; while the head-symbol may contain nothing but irrelevant bio-chemical processes, or may (if the real head is thinking about epistemology) contain secondary symbols of the house-symbol or of the head-symbol; and so on down, not *ad infinitum,* but just as far as the process at any moment is actually continuing itself, which is seldom very far.

If a critic still asks "How can the perceived house be in your head, if your head is in the perceived house?" perhaps the most effective treatment is to ask him to sit down in a quiet hour before a Royal Baking Powder can and ruminate on the precisely analogous question, "How is it possible for the can to be on the label, when the label is on the can?" [14] Both questions reduce to trivial equivoca-

[12] Mr. Lovejoy (see, e.g., pp. 229–230) sometimes criticizes the endocephalic hypothesis as though its thesis that "All conscious data are brain processes" ought to be simply convertible to "All brain processes are conscious data." But the endocephalic hypothesis is in truth a relational theory of consciousness, and holds that only brain processes of a certain special configuration are conscious data. Such configurations not only may not involve the entire brain, but are doubtless in the strictest sense very *abstract.*

[13] Of course, the house-symbol is real and physically real, in the purest sense; but it is convenient to use the word "real" in the common-sense fashion which opposes it, not to sheer nothingness, but to an imperfect copy.

[14] Just so one might ask, "How can Texas be on the map when the map is in Texas?" or "How can the train be on the time-table if the time-table is aboard the train?"

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tions because the words "can" and "perceived house" are used with an ambiguity or ellipsis which is usually innocuous, but which at our close epistemological quarters is fatal. The arguments which we are examining make much use of phrases like "the perceived world," "perceived house," "head which you observe," "the mountains that we see," "the perceptual object," "the cave that you are aware of." And a phrase like "perceived house" is, alas, easy to use indifferently to mean *either* what I have called above the real house, toward which, in some fashion, the act of perception is supposed to be addressed, *or* what I have called the house-symbol, that is, the actual content of the perceptual consciousness as it relates to the real house. Naturally, so long as the phrase is thus misused, a desperate confusion as to what is inside of what can be made to invest the whole problem, but as soon as the confusion is obviated by a happier choice of language,[15] it is evident not only that the endocephalic hypothesis is elegantly self-consistent, but also that it is *prima facie* consistent with the ordinary experience of each of us, which experience possesses just the internal singularity which the hypothesis implies.

Mr. Lovejoy and Mr. Pratt do not, in fact, lay their greatest stress on this primary objection in the transparent form in which I have reported it. But we can now proceed to see to what extent this objection furnishes the substratum for their more sophisticated criticism. In particular, we shall see how Mr. Lovejoy exploits the initial ambiguity to harass his adversary by alleging certain queer and embarrassing consequences which apparently follow from and discredit Mr. Russell's hypothesis. As we examine these supposed consequences, it is essential that we keep clearly in mind our simple picture of the physical situation as it has been outlined by the endocephalic hypothesis. Especially it is essential to remember that it is part of the theory that the idea is not necessarily a precise duplicate of its object, but is a more or less schematic and symbolic representation or abstract projection of it. Indeed, the idea would answer well enough if only its ulterior relations to other ideas should somehow correlate with the ulterior relations of its object to other objects. As a corollary, of course,—and this is really the same thing—the real physical world is very likely, on this theory, a good deal different, in many respects, from our ideas of it.[16] There is no con-

[15] It would not be fair to leave the impression that the ambiguous language was invented by the critics of the theory. The ambiguity is rife, no doubt unavoidably, in the language of Mr. Russell himself, although he seldom falls victim to it. See, e.g., *Revolt*, p. 233, and *Adventures*, pp. 71 and 72.

[16] On the other hand (and Mr. Lovejoy's argument shows the reminder is necessary) our ideas about the rest of the world, or about our heads, are *not* different from, but both essentially and existentially identical with, a certain abstract part of the real physical world, namely, a process in our brains.

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tradiction in this, however, and it is indeed what has always been believed by everybody but a handful of solipsists and some naïve objectivists. If the purist objects that an experienced element can not properly be said to "symbolize" something which itself can never be experienced and collated with the symbol, the purist may adjust his *language* to suit himself. It is enough for us to remember that on the endocephalic hypothesis, as a physical monism, such symbolization does not require an unthinkable reference to a metaphysically transcendent world, but only a simple extrapolation from one part of the one world to a neighboring part, a process on all fours with that by which the extremest objectivist would have us refer to the other side of the moon or the inside of a gas meter.

Abandoning any attempt to copy exactly the sequence of Mr. Lovejoy's exposition, let us consider first his account of the quandary of the brain surgeon.[17] The brain surgeon thinks that he is operating on a tumor in another fellow's brain whereas "the only kind of tumor, . . . according to Mr. Russell's view, which brain-surgeons ever . . . observe" is really in the surgeon's own brain, so that the operation is really performed on the surgeon, in spite of the fact that it is the other fellow who dies of the operation. Is it necessary to point out how the force of this depends on a pun? The tumor-image and the operation-image are indeed processes inside the real or original brain of the real or original surgeon; but the real or original tumor and the real or original knife, both of which any surgeon who has ever read any popular books on psychology, physics, or philosophy, believes to be not only numerically distinct, but markedly different from the surgeon's ideas of the tumor and knife, are safely located in the real and original head of the real and original patient, which entities likewise any conventionally instructed surgeon will probably consider to be markedly different from his ideas of them. The surgeon does not die of a tumor-image for the same reason that a ship is not scuttled by taking aboard a chart of the Pacific Ocean; and both surgeon and ship survive in spite of a fact which Mr. Lovejoy stresses as though it had some dark significance—the fact that both the tumor-image and the chart are in their own right *real physical things*.

We need only continue to keep straight our symbols and originals to dispose next of Mr. Lovejoy's problem of the cake of ice.[18] On the endocephalic hypothesis, Mr. Lovejoy complains, the perception of a cake of ice must engender in the percipient brain patches of hardness, coldness, and glittering translucency whose presence in such a place is *a priori* incredible and is materially unverifiable by such

[17] *Revolt*, p. 237.
[18] *Revolt*, pp. 236–237.

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robust methods as the introjection of a thermometer into the victim's gray matter. The answer is like the previous one. The real coldness will affect a real thermometer and to all appearances the coldness-symbol will affect the thermometer-symbol; but the coldness-symbol in a man's real brain will not noticeably affect a real thermometer any more than a copy-operation will kill even the most conscientious real surgeon. In similar fashion, to treat of a cognate difficulty, our real heads when we awake each morning do not increase tremendously in size and weight by being suddenly crammed with "extended objects having all the empirical characters of bedroom furniture,"[19] for the same reason that a painting of a battleship need not be larger or heavier than a painting of a basket of strawberries or than a plain coat of enamel.

Attendant once more on the paradoxes of the medical profession, Mr. Lovejoy professes to be anxious because on the endocephalic theory the brain physiologist can never perceive (or "observe") anything but the processes of his own brain; so that he might consider himself to be learning as much about brains when watching fireworks or playing golf as when dissecting other men's brains or reading anatomy books.[20] The cardinal ambiguity here resides in the word "perceive" (or "observe"). In one sense, on the endocephalic hypothesis, we "*perceive*" (are immediately and completely aware of) only the idea or symbol, which is supposedly an abstract event in the real brain. But in the ordinary sense we say that we "perceive" (in ordinary roman type) the real objects of which the ideas are surrogates.

Mr. Lovejoy himself agrees to the truism that bare presence to consciousness does not constitute knowledge.[21] Even if we make the usual but probably unnecessary epistemological abstraction from *behavior*, all knowledge, including all perception worthy of the name, is an affair primarily of syntax, of organization and structure, advancing and energetic. And all our ideas are organized in it to represent and refer to the world of real objects outside of us and them. The raw feels of intuition are blind and dumb. All toothaches are toothaches. All photographs are photographs. All radio speeches are, alas, radio speeches. But if we want to know *about* toothaches, the last thing we want to do is simply to *feel* one. If we want to find out about photography, a photograph of a photographic process will tell us infinitely more than just any photograph. If we want to find out about radio, a radio speech about radio will

[19] *Revolt*, p. 239.

[20] *Revolt*, pp. 233 and 237–238. The word "observe" is a favorite one in such contexts. See esp. p. 237.

[21] *Revolt*, p. 230. Mr. Pratt (*Adventures*, pp. 71–72) seems to suggest the previous distinction but subsequently neglects it.

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teach us what we could never learn from the ordinary irrelevant loquacity of the mechanism. And if our physiologist wants to know about brains, he can with perfect justice continue to cultivate brain states which represent brains in preference to brain states which represent fireworks or golf-balls. He can afford only in his more metaphysical moments to meditate that of his own brain he does have an intimate, immediate, but as such perfectly useless awareness which he has not of anything else.

We have hitherto dealt with Mr. Lovejoy's and Mr. Pratt's objections so far as these objections seem to ignore or deny the endocephalic theory's fundamental duality of symbol and original, of idea and object. Now, as a matter of fact, these two critics differ from some others by explicitly acknowledging this duality. They do it, however, only eventually and occasionally, only after they have ridiculed the endocephalic hypothesis on grounds which ignore the duality, and they do it only in order to show that the duality itself is ridiculous and untenable.

Mr. Pratt introduces the concession as though it were an unhappy afterthought of Mr. Try-Everything-Once: "The cave that is inside my head is not the same cave as the cave that my head is inside of."[22] And so Mr. Lovejoy: "Since percepts *must* be in our heads, and since they plainly are not in the heads with which we are, or suppose ourselves to be, already familiar, another head must be postulated to provide the required lodgment for them."[23]

But this duality is not an unhappy afterthought. It is the whole point of the theory, and it is a notion which ought to be as familiar as daylight to Mr. Pratt and Mr. Lovejoy. A large part of their argument is vitiated by their refusal to recognize that the "real physical head" in which Mr. Russell locates our percepts is not a gratuitous, supernatural, and inconceivably queer and remote invention or "addition"[24] of his. *It is just the regular old real physical head* which everybody but the extreme subjectivist believes (and which especially Mr. Lovejoy believes) to exist, and which everybody but the extreme objectivist believes (and which especially Mr. Lovejoy believes) to be both existentially diverse and essentially different from our ideas or percepts of it; the same old head which we all believe is part of a whole physical universe which we can not *in toto* introduce into our consciousness, but which we can "know" and even "perceive" in an indirect way which is satisfactory to most of us.

[22] *Adventures*, p. 75.

[23] *Revolt*, p. 240.

[24] *Revolt*, p. 245. On pp. 232–233 and 238–239, Mr. Lovejoy seems explicitly to deny the possibility of identifying Mr. Russell's idea-container with the ordinary physical head; but the reasons he advances are just the ineffectual ones which we are examining.

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To Mr. Lovejoy's complaint, "That the unperceived external counterpart of what I tactually experience, or my neighbor visually experiences, as 'my head' is itself, in any intelligible sense, a head, we clearly are not, upon Mr. Russell's principles, entitled to affirm,"[25] the answer is that anybody can ultimately mean by "real physical head" just something which reports itself to our consciousness in this wise, which has presumably at least some sketchy resemblance to this idea of it, and which acts to affect us in ways which we can plan for on the basis of the qualities and behavior of the idea. These I think are good unequivocal and intelligible reasons for calling it a "head," and most philosophers, including Mr. Lovejoy when he is propounding his own theory, have accepted them as such.

As for the real head's being "unperceived," the latter epithet turns out to be of considerable importance for Mr. Lovejoy. Here, as often, he contrives to make the doctrine sound incredible by calling the real head, for instance, the "unperceived" head, the utterly "imperceptible" head, and contrasting it with "the heads with which we are familiar." He refers roguishly to the invisible and unthinkably huge skull, decorated with cosmically gigantic ears and nose, out beyond the farthest nebula which we can perceive.[26] This is good clean fun, but it comes logically, I think, to nothing. The head which contains my ideas is *unperceivable,* just in that it is not totally contained in those regions of my head (i.e., of itself) or of your head which constitute the immediate content of our consciousness, any more than real tables and chairs and nebulae are.[27] But it is not "unperceivable" in the correct and ordinary sense. Our ideas are not *it,* but they *are* percepts of it. As for its being around and beyond the nebulae, it is only around the nebulae-symbols. The real nebulae are around it, and are as much bigger than it as the astronomer says they are.

This whole question of *size* becomes a stumbling-block when both Mr. Pratt and Mr. Lovejoy base objections on the proposition that the contents of consciousness, being real physical things, *must be just as big as they appear to be.*[28] The landscape as a whole appears to be perfectly huge. Hence any head which would contain it must be of absurdly vast proportions.

Now it does follow from the spatio-temporal physical reality of

[25] *Revolt,* pp. 243–244; and see p. 251.

[26] *Revolt,* pp. 244–245. Cp. *Adventures,* p. 76, e.g.

[27] Literally it comes the nearest being so *perceived,* since a real part of it is contained in *my* percept of it.

[28] *Revolt,* p. 244. *Adventures,* p. 74. The fault in this case also seems to have originated with Mr. Russell. I am reminded of Lucretius's inscrutable statement that the moon is just about as big as it looks.

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the conscious content that it is just as big as it "appears," if this means only that it is just as big as it is; but not if it means that it is just as big as we think it is. My percepts do not and can not "appear to be" of any absolute size, nor can they possibly disclose immediately their relative sizes with respect to any unexperienced world beyond them. Even within the field itself I should hesitate to assert that one idea is surely "bigger" than another. What I do find among ideas are clues which enable me to estimate, with more or less assurance, the relative sizes, among themselves, of the real and original objects which I suppose the ideas to represent. It is this estimation, I think, which Mr. Lovejoy and Mr. Pratt mean by the "apparent size" of our percepts. By the *real* size of our percepts we can mean only their size relatively to the constituents of the real physical world. This real size can be ascertained only by locating and measuring them with respect to that world; that is, only by the indirect establishment of some such theory as the endocephalic hypothesis. The mere "enjoyment" of the spread-out-ness of our conscious field will tell no more of its size with respect to the rest of the world than the contemplation of a map will divulge the *scale* to which it is drawn. It will not tell whether it stretches from real star to real star, or occupies only a real cubic millimeter, or even (if we grant the logical legitimacy of Mr. Lovejoy's own theory) occupies a totally different order from that of physical space.[29] The datum could work just about as well, and might feel just about the way it does, in either case.[30]

Sometimes Mr. Russell's critic rather paradoxically (although with much verbal warrant in Mr. Russell's works) translates this puzzle of the disparate *sizes* of the real thing and its ideational symbol, into a question of disparate *spaces*—"physical space" and "perceptual space," for instance.[31] This puzzle is gratuitous because "perceptual space" is on the endocephalic hypothesis simply a small patch of the one physical space which may contain processes with a diagrammatic structure which represents in an unmysterious map-like way some further reaches of that same space.

After what is said, it is unnecessary to treat in detail of Mr. Lovejoy's ridicule, for instance, of the notion that when my head

[29] I imagine that even relative sizes within the conscious field would likewise be established only indirectly, *via* their detailed localization in the one physical world.

[30] A number of careful readings leave me still unable to construe the sudden pronouncement of Mr. Pratt's Socrates that Mr. Try-Everything-Once must believe in "two caves" "*of approximately the same size.*" (*Adventures*, p. 75; my italics.) The subsequent comparison of the "causal" and "perceptual" heads, which is supposed to put the finishing touches on Mr. T. E. O., I am sure embodies a misunderstanding of the hypothesis.

[31] *Revolt*, pp. 241–243; 245 ff., and esp. pp. 249–251.

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bumps yours there are on the endocephalic hypothesis *six* heads involved in the transaction.[32] There are six heads only if you count the two copy-heads (which are really no more heads than a chart is the ocean) which are contained in each real head. But having first attacked Mr. Russell on grounds which ignored or denied the duality of copy-head and real head, and then on grounds which acknowledged and travestied the duality of copy-head and real head, Mr. Lovejoy now (if he will pardon the expression) ceases from his horse-play and identifies the second head with the ordinary real physical head. From this vantage point he advances some arguments which are of more serious value, although I think they are far from conclusive.

In the first place, Mr. Lovejoy thinks that the physics of relativity and the quantum describes a real physical head of a sort which acts quite differently from the content of our conscious field and so can not contain that field. It seems to me, however, first, that it is unlikely that the physicist knows all about all the characters of the physical head, and second, that it is unlikely that anybody knows anything about the detailed and mathematic structure of his conscious field, so that an assertion of their incompatibility is, to say the least, premature. Mr. Lovejoy, for instance, thinks it plain that the geometrical relations embodied in his conscious experience are not Minkowskian;[33] but this certitude is a mystery to me, for I have no more notion of the geometry of my ideas than I have of their size, save as I derive it indirectly from the putative geometry of the physical world. I suspect that Mr. Lovejoy is only finding, as one of the ingredients of his conscious experience, the remnants of a common-sense *idea of* a Newtonian geometry which was originally intended for the physical world.

At certain other junctures, Mr. Lovejoy suggests that the physicist finds none of the familiar conscious *qualities* in the whirl of electrons and protons which presumably occupy the real physical head.[34] Since, however, the physicist is resolved to talk about nothing but relational structures, it is not surprising that, in spite of the fact that he never really experiences anything which is not qualitative, he never announces the discovery of qualities. Certainly he is not likely ever to discover an actual *absence* of qualities.[35] To

[32] *Revolt*, p. 245.

[33] *Revolt*, p. 246, and some pages following.

[34] *Revolt*, pp. 234, 239, 252, 254.

[35] Mr. Lovejoy seems to interpret Mr. Russell (*Revolt*, pp. 224–226, 235–236, 249–250) as denying qualities to the physical world outside our percepts. This, I am sure, is a mistake. Mr. Russell ventures that there is not good reason to ascribe exactly the same qualities to both idea and object; but all matter is for him intrinsically qualitative. Hence, on Mr. Russell's theory, the sensa are "generated" (*Revolt*, pp. 226, 249) only in the workaday sense in which acetylene gas and parabolas and steam are generated.

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justify in detail the compatibility and compresence of relational structures with sensuous qualities presents no doubt a problem, but enough suggestions are extant toward its naturalistic solution to preclude its being chalked up as hopeless.[36] A captious opponent might indeed complain because Mr. Lovejoy, having once argued that it is silly to locate ideas in our physical heads because we know nothing at all about such mysterious monsters, now argues that it is silly to locate them there because by way of physics we know all about physical heads and their contents!

In the second place, granting an undistorted version of the endocephalic hypothesis, Mr. Lovejoy asks why it is not possible to open another man's skull and perceive the percepts there.[37] He seems a little ashamed of this suggestion, but I think it may prove the best of his arguments. If the brain-state which I enjoy is definitely *like* the objects which it is supposed to perceive; and if your brain-state is definitely like *its* objects; then when I perceive at the same time your brain and the objects which you are perceiving, I ought to find in the brain-state which I enjoy a definite secondary likeness between the idea which represents your brain-state and the idea which represents the object which you are perceiving! The relation of representation, that is, ought to be *transitive*. I think this, in spite of its bizarre finesse, is a real objection, but it is not a final one. The endocephalic hypothesis provides for any amount of superficial dissimilarity between idea and object. What is important for knowledge is only a schematic correlation, so that we can behave successfully with reference to our ideas. Such a schematic similarity might be so remote, so abstract, so diffuse, or so minute, as to escape physiological scrutiny. As a matter of fact there are plenty of physiologists and psychologists who think that they are tracing such an abstract parallelism, while the ordinary working hypothesis of psychophysical correlation takes such a parallelism for granted. When and if our percepts *are* specifically located, it will of course be found that the dipsomaniac's pink rats, for instance, do have mass, obey the laws of thermodynamics, and so on.[38]

Mr. Lovejoy's final objection is that the endocephalic hypothesis can mean nothing but "intra-corporeal solipsism," which is "a self-contradictory doctrine,"[39] since once shut up inside our skins we

[36] See, for instance, Russell's own theory, and the theories of Bergson, Drake, Holt, and Alexander. In this direction, of course, is to be found the reason why ordinary percepts seem to be so "radically different" from the other content of the "physical brain." (*Revolt*, pp. 239–240.)

[37] *Revolt*, p. 238. Compare *Adventures*, p. 69.

[38] Mr. Lovejoy wonders why they don't: *Revolt*, p. 253. Compare pp. 234, 236, 239–240.

[39] *Revolt*, pp. 255 and 256.

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could never know anything about what is outside, including the fact that we have skins. This is the most ancient of all arguments against all epistemological dualism, and although I am not an epistemological dualist, I confess that I am unable to see any force in it. A sensitive and docile organism of the type which Mr. Russell supposes, generating ideas in its head at the instance of the physical and physiological causes which the hypothesis describes, might be expected to generate among those ideas not only the complex idea of[40] the rest of the world in general, but in particular and among others the endocephalic hypothesis itself; and by hypothesis this hypothesis would be true. Mr. Lovejoy, like many recent epistemologists, takes too seriously both the question of the location of the conscious datum and the question of its pictorial likeness to its object. The common assumption is false, I think, that we can not go wrong about anything which is identical with the datum (compare Mr. Lovejoy on the physiologist's brain) and can not go right about anything which isn't (compare Mr. Lovejoy on intracorporeal solipsism).

When we consider in retrospect the list of Mr. Lovejoy's and Mr. Pratt's spirited attacks on Mr. Russell, one of the oddest features of the campaign is that although our critical realists are ardent epistemological dualists as well as psychophysical dualists, and although their intention is consequently to belabor Mr. Russell as the last reckless representative of psychophysical monism, in their haste to use any stick to beat such a gay dog, they have laid about them with arguments whose sole force is against, not his psychophysical monism, but his epistemological dualism. The other critics whom we mentioned could argue with more consistency (but no more cogency) because they were *not* dualists. But what Mr. Lovejoy and Mr. Pratt want to prove is, first, that an idea is not identical with its object, and second that it is not part of the physical world at all. In order to prove that an idea is not part of the physical world at all they must prove that it is not part of the percipient's brain. But in order to prove that it is not part of the percipient's brain, they can not resist the use of arguments to the effect that it must be identical with another part of the physical world, namely, with the object of the idea! If Mr. Pratt and Mr. Lovejoy had been successful, they would have refuted both of their own fundamental theses.

The cardinal ambiguity of "the things we perceive," for instance, is worse than ever on Mr. Lovejoy's and Mr. Pratt's theory, because their diremption is not just between two parts of the physical world, but between a physical object and an immaterial and habitationless idea whose link and likeness with the physical object it is the boast of

[40] Might, in Mr. Lovejoy's odd phrase, p. 255, "lay hold upon."

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their philosophy to declare unique and ineffable. If we are ever to refer incredulously to the grotesquery of an "unperceived physical head," it ought to be with reference to these more grandiose dualists for whom the difference between the idea-head and the real head is vaster than the abyss between the stars or than the difference between onions and onomatopoeia. Following their play on words, we can remark that according to their doctrine the brain surgeon "perceives" himself to be slicing gray chunks out of his own superlunary *mind*. The brain physiologist, whether he watches fireworks or brains or books, can really do nothing but introspect the pure pneumatics of his own psyche! The hardness and coldness of the "perceived ice" are bodiless residents on the astral plane where, fortunately for the theory, no thermometers can be applied to them. When you and I bump our heads together there is wrack and ruin in two worlds at once which involves the collision of two physical heads and four psychic heads. Our philosophers who complained because the considerable *size* and the Newtonian geometry of their ideas do not jibe with Mr. Russell's theory, now announce that their ideas have no size at all and are in a limbo beyond the pale of geometry; while they are spared the question why a man's percepts can not be spied upon by anybody else only by the *ad hoc* stipulation that mental content is that sort of thing—that is, only by amending their hypothesis so that it has no observable implicates which could either verify or refute it. Most remarkable of all, however, is Mr. Lovejoy's reckless use of the general argument against all epistemological dualism. It is remarkable because if on Mr. Russell's hypothesis we can not cognitively get outside of our own skins, on Mr. Lovejoy's hypothesis we can not even get as far as the *inside* of our own skins. We do not get within hailing distance of any shred of the physical world—although Mr. Lovejoy provides that the physical process to which our consciousness approaches the nearest (in some special and metaphorical sense) is inside our skins.[41]

Whatever its detailed faults may be, *The Revolt Against Dualism* remains a marvel of painstaking analysis and ingenious critique. It contains a multitude of subtle insights which must bring profit and pleasure to both monists and dualists. But I think that in its attack on Mr. Russell's "latest doctrine" it fails crucially to dispose of a formidable leader of the Revolt against which it is revolting. I do not claim that Mr. Lovejoy scores no points at the expense of Mr. Russell, especially at the expense of the more idiosyncratic and decorative aspects of his philosophy, but I do claim that, like Mr.

[41] He seems to be aware of the difficulty on pp. 51–52, but handles it in a gingerly fashion at variance with his confidence when he is attacking Mr. Russell.

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Pratt, he has not even come fairly to grips with the central doctrine of the physical character and intra-cranial location of our percepts.

My ideas, I think, are not for the most part in my head. The endocephalic hypothesis is on various grounds a rather less likely hypothesis than either pan-objectivism (the theory that my ideas are literally abstract constituents of perceived objects external to the organism) or even, perhaps, objective relativism (the theory that they somehow inhere in the total transaction of the organism with the object). But I do think that my ideas are *somewhere*, and not pale wanderers without local habitation or a name. I think that almost any disposal of them is more probable than a conclusion which would so thoroughly violate all the canons of scientific inquiry, and I think that Mr. Pratt and Mr. Lovejoy have done philosophy a disservice by their insistence that the aversion of so much of recent scientific philosophy to such a barren virgin has been nothing but an emotional repugnance. It is no accident that our authors' own arguments for dualism can merely attempt to eliminate its monistic alternatives. Dualism remains to the end negative and undefined, devoid of empirical implications, and as against its advocates' policy of pure destruction, a positive hypothesis like Mr. Russell's needs only to avoid destruction to celebrate perhaps a greater triumph than it deserves.

It is conceivable that internal contradiction may eventually be discovered in the endocephalic hypothesis or that evidence may come to light to refute it once and for all. My own guess, however, is rather that it will turn out to be one of those theories which are damned by their ultimate irrefutability, so that it must drift forever in the logical doldrums with such hypotheses as solipsism, the theory of free will, and the doctrine of human immortality.

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## MEASUREMENT RELATIONSHIP AND CORRELATION

THE use of quantitative methods in psychology, as well as in the other social sciences, is constantly increasing. In other words, verbal descriptions of psychological phenomena are giving way to quantitative descriptions. This shift is of particular significance with reference to the definition of terminology. In a verbal analysis the ambiguity of words is at once the refuge of the slovenly and the despair of the precise thinker.

Many bitter controversies owe their origin and propagation to the nebulous character of the terminology employed. Even among those more conscientious workers who have striven to define their

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terminology, their definitions have usually been stigmatized with as much if not more ambiguity than the terminology employed in presentation of their basic concepts. New schools of psychology have differentiated themselves from traditional schools, not by developing new concepts and discovering new phenomena, but simply by describing the older phenomena with a different terminology. To be sure, there may have been a shift in emphasis from one concept or set of concepts to another, but in the main the similarities are more striking than the differences, once the verbal formulæ are reduced to a common denominator.

But in a quantitative analysis of psychological data the choice of terminology is much less at the option of the individual investigator than is the case in a verbal analysis. The words employed have precise significance in terms of physical or mechanical operations. For this reason it is not only desirable but absolutely imperative that the terminology, however arbitrary, be uniform and entirely unequivocal.

In any quantitative analysis we deal primarily with numbers. The ways in which numbers may be combined and manipulated are perfectly definite. Specific names have been adopted to designate the various operations or groups of operations to which numerical data may be subjected. Psychologists who are not familiar with these operations and with their significance frequently use the terminology associated with them in an erroneous or misleading sense.

The concepts involved in any quantitative analysis may be divided into three general categories, namely, measurement, relationship, and correlation. These three categories are interdependent, but each has come to have a very definite meaning of its own from the point of view of statistical analysis. Their particular importance lies in the basic rôle they play with reference to prediction. That their meaning is frequently not appreciated is evident from the sense in which they have been used in many of the articles and books which have appeared during the past ten years.

Perhaps the simplest of the three basic concepts is that of measurement. Certainly the idea of measurement is not of recent origin in psychology, but the vogue which it enjoys at present is unquestionably greater than it was in the last century or the first two decades of the present. However, even with all its current popularity, the meaning and ultimate importance of measurement is far from obvious. The term itself implies that there is something to be measured. It makes no assumptions, however, about what is being measured or the utility of the measuring process.

A scientific measurement is always expressed in numerical terms. Unfortunately it is possible to obtain these numerical values without

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knowing what is being measured. Any structure decomposible into elements or units which can be counted may have as its measure the number of elements into which it is divided. Thus, if it is possible to count the elements, it is possible to measure the entity. Conversely, any group of elements, homogeneous with respect to a specified quality, may be said to define a quantitative entity, and the number of elements in the group is the measure of the magnitude of that entity.

Evidently the operations of decomposition and synthesis may be performed in numerous ways. Taking such a simple thing as a typewritten page, it may be quantitatively characterized in a great variety of ways. It may have as its measure the number of letters on the page, or the number of words. Again, the number of verbs, nouns, or some other part of speech may be used as a quantitative measure. Or we may describe it in terms of the total number of square inches contained in it, or by merely the number of square inches of white space. These are only a few of the possible ways in which such a trivial entity as a typewritten page may be described by counting the number of elements, homogeneous with respect to a given attribute, which it contains.

This is all by way of emphasizing how readily measurements may be obtained. Whenever counting is possible measurement is possible. Measurement in the physical sciences has been employed much longer than in psychology, or, for that matter, in any of the social sciences, and parallel with the measuring activities of the physical scientists have come the discovery and precise formulation of new laws.

The result has not been altogether fortunate for psychology. Psychologists have noted the major rôle which measurement plays in the physical sciences together with the phenomenal development and applications of physical laws. Many, however, have tended to regard the quantitative approach as an end in itself, not fully realizing that it is at best only a means. This tendency to exalt the importance of measurement, *per se,* coupled with the facility with which measurements may be derived, has resulted in the accumulation of vast bodies of quantitative data.

Psychologists have counted the thousandths of seconds elapsing between a given stimulus and a given response and called this number reaction time. They have counted the number of millimeters between two points of dermal stimulation which would, with a given degree of consistency, be reported as two points, and called it the dual point threshold. They have counted the number of times a rat enters a blind alley before he finally travels from the starting box to the goal "without error" and have called this learning ability.

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They have counted the number of items in a series of conundrums which have been reacted to in an arbitrarily specified manner and have called it intelligence.

These are only a few of the many things which psychologists have counted and named, with the result that many cynics crowd the side-lines and chorus "what of it?" while others nestle with comfortable confidence in the depths of their armchairs and weave new configurations from the faded verbal strands of the older systems of psychology.

But, granting the scientific sterility of mere counting, neither the skepticism of the cynics nor the regression of the more positive critics can claim full justification. It is no indictment of the counting method that few startling facts have sprung from the vast accumulation of numbers. Nor should the counting method be condemned because many of the conclusions drawn from it have been equivocal and often conflicting. The utility of the counting method lies not in the multiplicity of things which may be counted, but rather in a heuristic determination of what shall be counted and of how the numbers resulting from the counting process shall be manipulated. Almost anyone can count, once the units to be counted are specified, but a great deal of discrimination is required to select those units whose counted numbers will yield significant results. And not only discrimination, but also considerable imagination and ingenuity is required for combining these numbers in such a way that they will have a high degree of scientific value.

To say that psychologists have been for the most part occupied with aimless tabulation or with spinning high-sounding theories from ambiguous phrases would be grossly unfair. The quest for significant relationships among phenomena has been arduous and persistent, although by no means universal. The terms "relationship" and "correlation" have become by-words of the psychological fraternity. And whatever meaning these words convey or in whatever sense they have been employed, there is always the implication of two or more entities or phenomena between which the relationships or correlations exist.

As previously indicated, measurement, relationship, and correlation are the basic concepts involved in any complete quantitative analysis. It is the measuring or counting process coupled with an appreciation of the concepts of relationship and correlation which has been responsible for the success of research activity in the physical sciences. The failure to understand the interdependence of these three concepts has contributed largely to much of the confusion and contradiction among psychologists. While the concept of measurement has been relatively clear in their thinking, the rôle

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which it plays in a precise definition of relationship and correlation as these terms are employed in quantitative analysis has not been so evident. Furthermore, the terms "relationship" and "correlation" have frequently been regarded as synonymous, whereas the two are quite distinct in meaning.

To bring out this distinction, let us first consider what significance measurement has for relationship. By relationship in the quantitative sense we mean that if the magnitude of one phenomenon changes, the magnitude of another changes also. But we mean more. We mean that as the magnitude of one phenomenon varies, the magnitude of another varies in some specifically defined manner.

It is not this concommitant or sequential variation of two or more variable phenomena to which the term "relationship" refers. Rather it has a precise mathematical significance. A relationship in quantitative analysis is always expressible in the form of a mathematical equation. Having given a certain measure of one variable and a subsequent measured change, the relationship tells us how much will be the measured change of the other variable. The ratios of these measured changes may be constant for any arbitrarily selected value of the first variable, in which case we say that the two magnitudes vary proportionally. This type of relationship we describe as a linear or straight-line relationship. This is the simplest form of relationship. It may be that the ratio of the changes in magnitude varies as the magnitude of one or the other of the variables. In this case the relationship is curvilinear. There are many other more complex ways in which the ratios of these changes in the magnitude of the two variables may vary. These, however, need not be discussed here.

The fact that relationship may be expressed in terms of mathematical equations makes possible prediction in any science, and science is successful only to the extent that it can predict from the change in one or more variables what will be the change in another variable. Relationships can not be determined unless first the counting process has been carried through, but the measurements as such resulting from the counting process are of no value in prediction.

The best known mathematical formulation used to express a relationship between psychological variables is Fechner's Law. This law describes the relationship existing between the magnitude of a stimulus intensity and the magnitude of the subsequent sensation intensity. It states that the ratio between a small change in the magnitude of the stimulus intensity and a subsequent small change in the magnitude of the sensation intensity is directly proportional to the magnitude of the stimulus intensity from which the change was measured. Mathematically, it states that the sensation intensity

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varies as the logarithm of the stimulus intensity. This is a curvilinear relationship as distinguished from a linear relationship.

The counting processes involved in measuring changes in stimulus intensity are comparatively simple. Those for measuring changes in sensation intensity are considerably more complex. Various counting processes have been developed for measuring these changes in sensation intensity. They are commonly known as the psychophysical methods.

But while it is theoretically possible to determine how a change in one variable is accompanied or followed by a change in another it is frequently found that the ratios of these changes vary from one time to another, so that, having given the magnitude of one variable, we can predict only within certain limits the value of the other. This is what we mean by the term "correlation." If we can predict within close limits, then we say that there is a high correlation between the two variables. If the limits are wide then we say that the correlation is low.

A correlation coëfficient is sometimes referred to as a measure of the relationship between two variables. More precisely it is a measure of the degree of relationship between the variables.

The limits within which the magnitude of one variable may be determined, having given the value of another, may be unnecessarily large because of the fact that the wrong relationship has been assumed. For example, if we assumed that the magnitude of the sensation intensity varied as the magnitude of the stimulus intensity rather than the logarithm of this intensity, then we would find the limits within which we could predict sensation intensity from stimulus intensity greatly increased for certain ranges of the stimulus magnitude. Consequently, we would be led to the conclusion that a much lower correlation exists between stimulus and sensation intensity than is actually the case. The correlation between variables is always a function of the type of relationship which is assumed to exist between them.

Most of the correlation coëfficients which have been calculated from psychological data are based on the assumption that a linear or straight-line relationship exists between the variables correlated. In general these assumptions have been adequate in view of the difficulty of obtaining accurate measurements.

In dealing with complex psychological phenomena, however, it is usually unsafe to assume that a change in one variable is completely determined by a change in another variable. In most cases a change in one variable may be regarded as the resultant of changes in a great many other variables. If changes in only one of these variables is measured the limits within which changes in the first variable

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may be predicted may become rather wide, for concommitant with changes in the prediction variable may occur opposing changes in the other variables.

Even assuming that the counting processes have been correctly carried through, so that the measurements are accurate, the limits within which the value of the first variable may be predicted will vary according to how many of those variables, changes in which are accompanied or followed by changes in the predicted variable, are taken into account, and also according to the degree of accuracy with which the relationship between all the variables is determined.

Hence, in order for the counting process to be useful in prediction it is necessary to know what to count and what to do with the numbers resulting from the counting process.

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## BOOK REVIEWS

*Scepticism and Construction: Bradley's Sceptical Principle as the Basis of Constructive Philosophy.* CHARLES A. CAMPBELL. New York: The Macmillan Co. 1931. Pp. xxiv + 322.

It must be remarked at once that Professor Campbell's book is both a valuable addition to bradleiana and a provocative contribution to philosophy. He approaches very closely to a true critical estimate of the misunderstood author of *Appearance and Reality,* and at the same time presents a sober analysis of the strong points and defects of "idealism" which comes welcomely at a time when those who wish to use that term are touted or flayed without stint but only rarely listened to.

*Scepticism and Construction* promises in its opening pages to do much toward a breaking down of the superstitions which surround Bradley's name and the reader is given a hint of the inadequacy of nearly all Bradley criticism. But the promise is not wholly fulfilled: very early the analysis slips back into the traditional vein with recurrent emphases on "non-contradiction" and "self-consistency" as the mark of the real established in *Appearance and Reality,* with a careful but redundant explanation of "internal" and "external" ground, and with an astounding (astounding in view of the freshness of Professor Campbell's early approach) absence of any reference to the central doctrine of "immediate experience." The principle of degrees of truth and reality, so important to Bradley, especially at the end of his career, is made "contradictory" (p. 32) by the introduction of a distinction between "pure" and "phenomenal" self-consistency which it would be, I think, impossible to

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document outside the pages of *Appearance and Reality*—a work doggedly clung to by critics despite the express recantations of its principles in the later *Essays on Truth and Reality*. Advocacy of a *supra*-relational Real is also consistently imputed by Professor Campbell to Bradley although the whole of chapter six of the *Essays* is devoted to a denial of this. Bradley says at one point, "We never in one sense do, or can, go beyond immediate experience."[1] And immediate experience prior to this (though no longer) has always been *sub*-relational.

The gravest fault in the book, however, is the misconstruction of Bradley's "scepticism." To put the matter in the simplest way, Bradley's scepticism was actually due to his ability (an ability which he shared with Dewey) to see cognition *in perspective*. Again and again he stressed this: "The absolute right owned by every side of life is . . . conditional on its service, and on its acceptance of limited value and reality."[2] This seeing knowledge in perspective Professor Campbell fails to appreciate. "I am prepared," he remarks, "to argue that it is only if the 'order' postulated by the intellect be interpreted as an order *not* intelligible that Reality can in the end be legitimately taken as 'cosmos' rather than 'chaos'" (p. 80). Bradley would have pounced on this at once and objected that the "'order' postulated by the intellect" is an order only of the cognitively real and not of "Reality," which is conative and emotive as well as cognitive, i.e., *felt* as well as known.

Professor Campbell is not unaware of the basis of his break with Bradley. "In common with, I imagine, the large majority of Bradley's readers, I find myself quite unable to accept the view that in experience we start from (or, indeed, at any time possess) a 'felt unity' . . ." (p. 51). But unfortunately this recognition does not prevent his exposition of Bradley from being vitiated by a false emphasis on Reason, Mind, cognitive experience, on all the categories which in *Appearance and Reality* were regarded as "ultimate." It is revealing of his critical position, for example, that Professor Campbell in a "Note on Bradley's Criticism of the 'Reality' of the Finite Self" (pp. 179ff.) makes not one mention of the treatment of this question in the *Essays*, the whole analysis proceeding on the basis of chapter nine of *Appearance and Reality*, and being accordingly, in the light of Bradley's later position, entirely inadequate.

Constructively the book is a defense of "Supra-rationalism." "Supra-rationalism denies the omni-competence of mind, denies that 'mind is in a manner all things' (if we interpret that maxim in its strictness). It contends that mind is a function limited by definite conditions, and that the apprehension of these conditions must in

[1] *Essays on Truth and Reality*, p. 190, n. 1.
[2] *Ibid.*, p. 470.

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the nature of the case be a 'knowing that,' never a 'knowing how'—since a 'knowing how' would imply that the conditions in question were *not* limiting conditions'' (p. 308). The development of this thesis is full of difficulties, not the least being the author's assertion that ''to condemn the world of experience . . . it is not necessary that we should know what reality *is*. It is enough if we know what reality is *not*'' (p. 76). This immediately raises the whole question of negative judgment, and against the objection that no negation can be significantly made save in the light of a positive ascription of character which would *exclude* the negative character, Professor Campbell has a ready but suspiciously *ad hoc* defense. ''The exclusion of the particular character implies the affirmation that the thing is *of the general character* of which the particular character is an instance'' (p. 77. My own italics). This is a highly debatable assertion (debatable, that is, if assumed as complete), for to be ''of a general character'' is always to be of that character *in some definite respect;* and to know that ''the heart of this flower is not yellow'' (Professor Campbell's illustration) is surely to know more than merely that ''the heart of this flower is coloured.'' Building on this, Professor Campbell points out that to say Reality is not self-contradictory is to deal with what is ''itself of ultimate generality; or, to put it otherwise, that of which it (relationality) is an instance is just 'character-in-general' . . .'', in which case ''we know that the apprehension of this connection must be immediate, since it is the logical antecedent of all mediating processes'' (p. 78), a judgment ''which is by nature ungrounded, intuitive, or immediate'' (p. 79). The upshot of the argument is to establish Reality not as *non*-rational in the modest sense in which Bradley used the term, but as *supra*-rational and *supra*-experiential. This position once asserted, it is ably defended throughout the remainder of the book by research in the fields of moral obligation and moral religious values.

Professor Campbell's preface is as stimulating as any chapter in the essay proper, neat shafts being darted at the popular critic of philosophy as ''escape,'' and the equally popular and confused advocates of philosophic scientism. ''Here I am quite impenitent,'' Professor Campbell states. ''I do not believe that on any single major issue raised in this book has the scientist any relevant comment to make. . . . Why it should be supposed that recent advances in the *findings* of science—however exciting—should in any way mitigate the disqualifications intrinsic in the *method* of science, is a question which the 'scientific' philosopher seems to me never to face'' (p. x).

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*Immanuel Kant in England: 1793–1838.* René Wellek. Princeton: Princeton University Press. 1931. Pp. xi + 317.

This decade has already seen the publication of several volumes working toward a critical estimate of the place of idealism in English philosophy, and to this end Dr. Wellek's book will be a study whose importance (at least for academicians) can scarcely be exaggerated. The influence of Kant on British thought before Green has but recently been given close consideration, earlier historians assuming apparently that Kant's place in the British Isles was so negligible in the face of the lusty proselytizing of the Utilitarians and the canny attempts of the Scotch philosophers to answer Hume on their own initiative that it needed at best a word or two of mention. The net result has been to give us (at least by implication) a picture of the first two decades of the last century in England as a sort of philosophic doldrums so far as Kantianism is concerned. Dr. Wellek's book should destroy this illusion completely. He has taken the forty-five years preceding 1838 (when the first complete English translation of the *Critique* appeared) and combed them thoroughly for all indications of the lessening of English and Scotch insularity.

The book is divided into five main sections: I. "Kant's Introduction to England," which contains a detailed account of the earliest notices of the *Critique* in the British Isles prior to 1800; II. "The Scotch Philosophy and Kant," a careful analysis of the parallelisms and contacts between the Kantian answer to Hume and those of the Scots; III. "Coleridge and Kant," the most complete critical treatment of Coleridge as philosopher which has yet been published; IV. "The Romantic Generation and Kant," a long and unprejudiced discussion of the Kantian and anti-Kantian aspects of Crabb Robinson, Wordsworth, De Quincey, and Carlyle, with a very sane page and a half that should discourage any future effort to saddle Shelley with Kantian bias pro or con; V. "Two Enthusiasts," a delightful chapter devoted to the philosophic vagaries of one Richter (a painter) and one Wirgman (a bourgeois jeweller), both bitten by the Kantian bug as early as 1795 and loud, if incoherent, proponents of the German's philosophy long into the nineteenth century. In explaining the inclusion of this section, Dr. Wellek remarks that though both Richter and Wirgman "have remained practically unknown to modern scholarship, they deserve some attention, if not for their own sake, at least as highly interesting and diverting illustrations of the background out of which grew the thought of the English romantic period" (p. 205). But the quaint section needs little apology.

Dr. Wellek has drawn largely on unpublished sources and constructed an historical study that displays not only its author's remarkable capacity for careful research, but a certain geniality and

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deftness of approach with which careful research is but rarely tinctured.

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*McTaggart.* G. LOWES DICKINSON. (With chapters by Basil Williams and S. V. Keeling.) Cambridge: University Press. 1931. Pp. viii + 160.

Although his name appears on the title page, Lowes Dickinson assures the reader of *McTaggart* that his connection with the memoir consisted mainly in "arrangement of the material," a task undertaken when illness caused Mr. Wedd, McTaggart's oldest friend, to resign it. Even with this in mind, though, the discerning critic can scarcely exonerate Mr. Lowes Dickinson from all responsibility for the book's weaknesses. Some fault perhaps should be imputed to McTaggart himself for not having been a better biographical subject; yet the materials for a fairly interesting story were there, and when his encomiasts allow McTaggart himself to speak (as they do at commendable length) the result is unfailingly provocative. But, taken as a whole, the biographical portion of the book is dull.

From the opening sentence which states piquantly that "John McTaggart Ellis McTaggart was born on September 3d, 1866, at 28 Norfolk Square, London," to the end of chapter seven (characteristically entitled "The End") the eulogy is prosy, often tasteless, and, coming from one who has walked so often in the Academy, singularly unimaginative. Nor does the book, despite its eulogies, succeed in presenting McTaggart as other than an extraordinarily ordinary person. Ironically enough this result is achieved by the very earnestness of the authors. For example, it is noted that young McTaggart was unpopular at school because of his family's agnosticism, and "one is immediately reminded of Shelley at Eton" (p. 12). The next sentence reads: "But whatever Jack may have thought one may be assured that he did not parade his views with the passion of that great rebel. For the firmness of his opinions was accompanied, it would seem, even at this date by his sense of solidarity with any institution to which he happened to belong." This predilection for the nether aspects of Toryism is stressed more than once by the authors and "came to a head when McTaggart took a leading part in the expulsion of Bertrand Russell from his lectureship" (p. 116). The same monopticism is evident when the authors rationalize the "inevitability" of McTaggart's being whole-heartedly chauvinistic at the beginning of the war "without either desiring or attempting to know anything about the real causes and the probable effects of the catastrophe" (p. 116).

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Perhaps, however, the memoir was not meant as scented eulogy. Perhaps it was collected and edited as an attempt at realistic biography. Unfortunately just enough indication of both purposes is given to make the effect hopelessly ambiguous. And no motive can excuse the plodding style.

Mr. Keeling, in an appended essay on "McTaggart's Metaphysics," redeems the book to some extent by doing an exceptionally lucid and thorough job of exposition. In thirty pages he presents a detailed and documented analysis of the salient features of McTaggart's philosophy, which for clarity and simplicity can scarcely be matched by any essay of similar limited compass.

RUDOLF KAGEY.

WASHINGTON SQUARE COLLEGE,
NEW YORK UNIVERSITY.

*The Origin and Development of the State Cult of Confucius. An Introductory Study.* JOHN K. SHRYOCK. New York: The Century Company. 1932. Pp. xiii + 298.

We are fortunate to have in a Western language this critical study of the state cult of Confucius. The author does not exaggerate when he says (Foreword, p. viii) that "it is probably the most comprehensive account of the cult of Confucius that has yet been made in a European language. In fact there is not yet in the Chinese language a study of this cult from the genetic point of view—though, of course, all the materials for such a study are there—buried, however, in a variety of documents not easy to analyse and interpret. The mass of information, therefore, which the author assembled is necessarily the fruit of a long and tedious inquiry.

Much of the volume is given over to a tracing of the historical and intellectual background in which the state cult developed in the past two millenniums. This the author does with admirable proportion, and in a manner unusually convincing, with the result that the book may be read with almost equal profit as an introduction to Chinese civilization. The specialist will say that too much space was devoted to the background, and not enough to such details as temple plans and records, ritual observances, ceremonial music, etc. Each of the latter subjects, however, is worthy of special treatment in itself, and perhaps did not come within the scope of what the author meant merely to be "an introductory study."

In tracing so vast a background the author has necessarily to lean heavily on the investigations of others whose conclusions are themselves too often inadequate if not, on occasion, downright faulty. One might pick out numerous conclusions thus reached with which one might take exception, but as these are incidental to the main

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theme it would not be just to enumerate them here. One can, however, take exception to the inconsistency of the transcription of Chinese sounds as these appear in personal names or in bibliographic titles. Systems of romanization are not matters of personal opinion; if they are to convey any meaning, they must follow recognizable principles. In no reasonable transcription could the letters *tsu*, for example (pp. 31 and 32) be taken to refer, as they here do, to the Chinese word for "history" (usually transcribed by English-speaking peoples as *shih*). It is the frequency of these divergences that invests them with an importance that a few isolated examples would not have.

In the Appendix one will find an up-to-date list of the tablets in a Confucian temple, together with a brief account of each name, and the date when it first appeared in the rituals. In addition, there are three valuable bibliographies of similar studies in European, Japanese, and Chinese languages—so comprehensive, however, that, as the author states, they could not all be utilized in the preparation of this book.

ARTHUR W. HUMMEL.

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## JOURNALS AND NEW BOOKS.

THE PHILOSOPHICAL REVIEW. Vol. XLI, 6. Louis de la Forge and the Critique of Substantial Forms: *A. G. A. Balz.* Space, Time, and God. A Chapter in Eighteenth-Century English Philosophy: *John Tull Baker.* The Experimental Philosophy of Robert Boyle (1626–91): *Philip Paul Wiener.* Discussion—Reason and Nature: *E. A. Burtt.*

REVUE DE METAPHYSIQUE ET DE MORALE. 39e Année, No. 3. L'Astrobiologie et la pensée de l'Asie: Essai sur les origines des sciences et des théories morales: *R. Berthelot.* Rémarques sur les principales implications métaphysiques des théories et des idées récentes de la physique: *J. Joergensen.* Qu'est-ce qu'une philosophie chrétienne?: *M. Souriau.*

Blumenfeld, Walter: Sinn und Unsinn. München: Ernst Reinhardt. 1933. 110 pp. 4.20 M.

Freund, Ludwig: Philosophie ein unlösbares Problem. München: Ernst Reinhardt. 1933. 53 pp. 2.50 M.

Gibson, A. Boyce: The Philosophy of Descartes. London: Methuen & Co., Ltd. New York: E. P. Dutton & Co., Inc. 1932. xiii + 382 pp. $5.00.

Heussi, Karl: Die Krisis des Historismus. Tübingen: J. C. B. Mohr (Paul Siebeck). 1932. 104 pp. 4.20 M.

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Höchsmann, Franz Xaver: Der Weg zum Sinn des Seins. Wien: L. W. Seider & Sohn. 1933. 268 pp. $1.20.

Jaouen, Jean: La Formation sociale dans l'Enseignement secondaire. (Les Sciences et l'Art de l'Education.) Juvisy: Les Editions du Cerf. 1932. 194 pp.

Martin, Everett Dean: Civilizing Ourselves. Intellectual Maturity in the Modern World. New York: W. W. Norton & Company, Inc. 1932. xi + 329 pp. $3.00.

Rivenburg, Narola Elizabeth: Harriet Martineau. An Example of Victorian Conflict. (Ph. D. dissertation, Columbia University, 1932.) Privately printed. 110 pp.

Sahuque, Adrienne: Les Dogmes Sexuels. Paris: Félix Alcan. 1932. 375 pp. 30 fr.

Spinetti, Gastone Silvano: La Reazione Morale. Roma: Angelo Signorelli. 1933. vii + 82 pp.

Wolff, Gustav: Leben und Erkennen: Vorarbeiten zu einer biologischen Philosophie. München: Ernst Reinhardt. 1933. 442 pp. 11.50 M.

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## NOTES AND NEWS

The Open Court Publishing Company announces a change in the publication of *The Monist* from a quarterly to a bi-annual. It will be published in January and July beginning January, 1933. The yearly subscription price will be $2.00. Single copies will remain at $1.10.

Duke University, Durham, N. C., announces a new psychological quarterly to be known as *Character and Personality*. Publication will begin in September, 1932, and continue thereafter in the months of December, March, June, and September. A British edition will also be issued simultaneously in London, and a German edition in Berlin. Annual subscription price is $2.00. The editor will be Robert Saudek (London) and among members of the editorial board, are William McDougall, Alfred Adler, Pierre Janet, C. G. Jung, Johannes Lange.

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Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 18. September 1, 1932.**

The Directive Influence in Living Organisms. RALPH S. LILLIE.
The Analysis of the Subject-Predicate Proposition. A. USHENKO.
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**Volume XXIX. No. 20. September 29, 1932.**

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Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 21. October 13, 1932.**

Reason as Fact and as Fetich (I). HORACE M. KALLEN.
Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 22. October 27, 1932.**

Reason as Fact and as Fetich (II). HORACE M. KALLEN.
A Notation on the Problem of the Past—With Especial Reference to George Herbert Mead. ALFRED TONNESS.
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# SYMBOLIC LOGIC

*By*

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*and*

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ASSOCIATE PROFESSOR OF PHILOSOPHY,
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THE JOURNAL OF PHILOSOPHY

# THE ABOVE-AND-BELOW NOTION

## Some Inferences from our Experience with it

1. *The Notion of Above-and-Below.*—The mind's own outfit, due, let us say, to previous experience, plays a major rôle in determining the form which its knowledge takes. The mind is always putting new impressions into old molds. For instance, a person who begins to study his thinking, divides his thinking into two sets, one set of outer experiences and another set of inner experiences. He makes this division because he sees, as he looks at other people, that they have, on the one hand, a set of experiences which he shares with them, and, on the other hand, they have a set of experiences in which he does not share. He, therefore, assumes that the same must be true of himself. It is hard to get this picture out of the person's mind. It is hard to convince him that he has only a single set of experiences which are for him neither outer nor inner. There is no primary direction in an individual's consciousness. His consciousness is as directionless as is his universe with which it is identical.

In our mental outfit or equipment, which we have just mentioned as playing a major rôle in the form that our knowledge takes, the above-and-below notion is an important factor and also a striking feature. It has received little attention from students of mental activities. The sensation of equilibrium they have considered. They have provided us with discussions of orientation. The notion of above-and-below, however, of up-and-down, is not covered by these words. The notion is quite distinct from that of space.

The notion is clear and specific. Aside from its interest as a fact for students of the mind, it has an interest for the general public. Because there are in our mental equipment other notions analogous to it, and in respect to these other notions we can from our experience with this particular notion draw inferences of extremely practical importance. The before-and-after notion, for example, may appear in a very different light.

The notion of above-and-below is not only a striking feature, but also an inalienable element in the mind's outfit, an integral part of our mental machinery. It refuses to be eliminated by the arguments



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of maturer information. We can not dislodge it from our thinking process. Whenever we apply our thought machinery to relations of the earth and the heavenly bodies, the notion intrudes and can not be removed. Whenever and wherever we visualize space, we are compelled at the same time to visualize its parts, not only as three dimensional, but also as involving an above-and-below.

The ancients thought the world to be flat and could not conceive of any space where up and down failed to apply. We to-day can understand that the notion does not apply to space as a whole. We may express geometrical formulæ which dispense with it; but as soon as we picture our geometrical formulæ, the notion is there. Using an old distinction between conceiving a thing and perceiving a thing, we might say that the ancients could not conceive the notion away; and that while we are able to conceive it away, we can not perceive it away. Because if we put into a single picture the round world with ourselves upon it, then, in spite of all our efforts to the contrary, the dwellers in the antipodes will appear as if hanging by their feet, wrong side up. If we imagine ourselves out in stellar space, drawing near to one of the fixed stars, we have to think of ourselves as approaching it with our heads up, or sideways, or down.

We repeat, then, that this notion of up-and-down is not only a striking feature and an important factor, but also an inalienable element in our mental outfit. It refuses to be eliminated by the arguments of maturer knowledge.

2. *In Certain Cases the Notion Leads to Error.*—The fact back of the notion is the constant pull toward the center of the earth felt by humans and expressed by all heavy objects. We may say that the notion is the product of sensations connected with the phenomenon usually called gravitation. We word the statement thus cautiously because to some thinkers gravitation is only a short-hand symbol to include a certain set of behaviors that can be grouped together under a common description.

The notion of up-and-down has, therefore, pragmatic sanction. It is justified. It is not an illusion. It is a part of our world of reality. It represents actual facts. It does useful work when applied to limited earth areas. The notion, however, does violence to reality in the larger range of facts to which instinctively and, as we said, inevitably the mind has come to apply it. The notion helps us when we are thinking of restricted areas. It leads to error when we are thinking of the earth as a whole.

The notion leads to still more disturbing errors when extended to space as a whole. Applied to siderial interstices it becomes a mental illusion.

It may be merely wrong association of ideas which produces the

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errors. The wrong association of ideas may be as simple as that which makes one carry his own misleading idea of where north lies into new territory. Almost every one has had this experience of coming into a strange locality, and because of the unconscious influence of the direction of the main street, or because of the position of the front door of the house in which he is, or of the lay of the land, or of something entirely inexplicable, he starts out with the wrong notion of the points of the compass. The result is that during all his stay in that place he is unable to correct his misimpression and to orient himself aright.

The wrong association of ideas which produces the errors may be as simple as that which makes a man who has often looked down at the water over the side of a moving boat have the illusion of moving up-stream on a bridge from which he happens to be looking down at the current of the stream. Such a person has the illusion of perceiving himself and the bridge upon which he stands, rushing along at the same speed at which the current is really passing under him.

Another similar illusion is frequently had on a train that is stopping in a railway station. Now it is usually the case that when one is on a train and objects pass the window, it is his train that is in motion. If, therefore, while his train is standing still at the station, another train alongside begins to move, the person finds it impossible to avoid the sensation of being in motion himself. He may know himself to be mistaken, but he has no control over his sensations to avoid the illusion.

The study of optical illusions reveals many instances where habits formed under one set of circumstances lead us into unavoidable misperceptions under another set of circumstances. This is because we carry over our experiences and the notions formed therefrom.

Whatever place association of ideas has in it, the fact remains that the notion of above-and-below, which has become a part of our mental equipment, thoroughly misleads our minds as to what position, taken in a larger sense, means. At the close of day we can not avoid seeing the sun as descending. The notion forces upon us the mistake of seeing the sky always above us. Though we know this application of the notion to be false, and though we know the sky to be no more above us than beside us or under us, we can not escape the illusion, nor think away the falsifying picture. To the ancients the suggestion or the possibility of the notion's being in any case an illusion would have been absolutely inconceivable.

To one who saw the world as flat, the belief that there is an above-and-below to everything, and that up-and-down is an integral quality of all space represented one of the immediate facts of experience.

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It represented also one of the great ultimate and final truths. His cosmology and even his theology were shaped to accord with this supposed ultimate fact. All those generalizations, however, as to stellar space and as to heavenly abodes which the ancients made, or which some still make to-day, basing the generalizations on the notion of above-and-below were and are in contradiction with the larger range of facts as we have come to know them.

We can easily imagine that a careful reasoner of the old regime might have called attention to the "arrow of space" as an underlying one-way property of space. He might have noted that:

(1) It is vividly recognized by consciousness.

(2) It is equally insisted on by our reasoning faculty which tells us that the reversal of the arrow would render the world nonsensical.

(3) It makes its appearance in physical science as indicating always a dissipation of energy.

A careful reasoner under the old regime might have said: I have two sources of knowledge as to the arrow of direction in space. One is my consciousness and the other is the measurement of the loss of energy. He would not have used the word "entropy," but he might have said, "Technically I am never lifting anything up because there is always a lowering of potential when I seem to be lifting a thing up."

Enlarging knowledge would have shown such careful reasoning to have been wrong. The arrows of direction at the ends of any diameter of the earth's circumference, far from establishing a one-way property of space, would point in exactly opposite directions.

3. *The Notion of Before-and-After.*—A notion very similar to this of above-and-below, just considered, is that of before-and-after, also a striking and important and inevitable feature of man's mental equipment. The error in any general extension of the former notion puts him in the way of questioning dogmatic statements that are based upon the ultimateness or the universality of the latter. It puts him in the position of saying that the notion of before-and-after, of earlier-and-later, may also appear to be of limited range in case men come to a larger understanding of things. It puts him in the position of saying that, though the notion of before-and-after is a legitimate and natural inference from one phase of experience, the notion may lead to error if applied to wider stretches of experience. He knows that China is not under him, although he seems always to point downward when he points to China; so he sees the possibility that with larger knowledge he may come to view precedence and consequence as justified only in his present limited way of looking at things.

We are doing no more than to point to such a discovery as a

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possibility. That the before-and-after notion, just as we perceive it, may be applicable to all reality, we do not deny. As empiricists, however, as strict reasoners from experience, we are obliged to put a question mark in the margin when such an assumption is taken for granted, and a still bigger question mark when such an assumption becomes the basis for a final philosophy and for a world-view. Any man whose brain is alert to valid inferences has the right to interpose the suggestion that some events which seem to us to be temporally in the past, and therefore seem to have disappeared for ever into the limbo of extinct things, may appear quite otherwise from a different viewpoint. The logical thinker is driven to the possibility that with more experience the chronological priority of a certain event with respect to certain other events may appear to be only an illusion.

Our experience with the above-and-below notion gives every open-minded man grounds for questioning the complete agreement between our present notion of before-and-after and the facts when they are looked at with a more extended horizon of knowledge and with a wider grasp of the realities.

When we speak thus we do not assert the possibility of the reversal of the arrow of time's direction, any more than we picture to-day a reversal at a given point of the arrow of direction of space. We do not expect to visualize a perception where the explosion of the gun shall precede the pulling of the trigger. The truth of the Copernican theory does not involve the brook's running up the mountainside.

4. *Querying the Accord between the Notion and the Facts.*—The contrast between the inferences which we have been suggesting and the theory of the subjectivity or ideality of time will contribute to an understanding of them. We are suggesting an experimental notion of time, one useful here, but ready to be modified there. Our suggestion is consistent with a most thorough-going empiricism.

Our approach, moreover, to the inferences will involve a view very different from that of the idealist as to the accord between the notion and the so-called facts (other ideas) that are woven into the notion. The theory of the subjectivity or ideality of time reached its position by way of the ideality of sounds and then of colors. With this approach the thinkers came with the expectation of at least a rough accord between any notion and all the facts (other ideas) that are back of the notion.

Because there is indeed a certain accord or correspondence between our notion of pitch in sound and the rapidity of air waves. We can make a single diagram and lay the increasing rapidity of the air waves along the same line. We can think of the two series as in the same direction.

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There is similarly a certain correspondence between the scale of colors and the shortness-quickness of the electro-magnetic wave lengths. Less successfully than in the case of tones, we can lay the colors and the rapidity of the waves in a sort of scale along the same line. With the traditional approach, therefore, one anticipated a correspondence between the notion of sequence in time and the entire range of facts (ideas) that are back of it.

So the physicist to-day assumes that "the mind's cognizance of time as a picture of the physical world represents a fairly accurate appreciation of its actual nature"; while the most radical of idealists does not seem to have doubted that the before-and-after relation is as ultimately and finally true as anything else in experience.

Approaching the before-and-after notion, however, from inferences drawn out of our experience with the above-and-below notion, we will feel no necessity to anticipate even a rough correspondence between the notion and the whole range of facts (ideas) to which we are instinctively and unavoidably led to apply it. Habits formed under one aspect of things often lead the mind astray under another aspect of things. Not anticipating even a rough correspondence, and not feeling any need for a correspondence, we are quite ready with this approach to grant that possibly with new viewpoints the words "future" and "past" may be seen not to apply to certain events. At least we will receive sceptically dogmatic conclusions based upon the supposed correspondence between the entire purport of facts and our idea of before-and-after.

5. *Did the Thinking Process Evolve?*—The importance of the scepticism suggested in the previous section is illustrated by the halt it gives to the confidence of the materialist when he opposes any belief in the tremendous value of human beings. Believers in the significance and value of human beings and of human effort back up their belief by pointing out the part that thought factors play in the constitution of the universe as we know it. They back up their belief by pointing out that so far as our knowledge of them goes, all so-called material things are ideas or concepts in thought processes, and that there is a thought factor in all our ideas of material objects, even of primitive star dust.

The materialistic evolutionist has always countered with the confident and devastating argument that thinking and consciousness "evolved" late in the course of development, and that he has the right to speak of pure matter which existed before thought factors came into existence. This means, of course, that existence preceded any possibility of a value phase in things.

Were it not for the confidence begotten of this devastating argument, the physicist would hardly dare to ignore with such assurance

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the truth that all materials appear to us as concepts, and that every fact is at least in part a notion. Too much emphasis can not be placed upon this argument as the one which fixes for the physicist his materialistic world-view.

To such a dogmatic and devastating argument our experience with the above-and-below notion gives one the right to say: "The materialist is assuming too much." It gives one the right to ask: "May not the before-and-after notion correspond so imperfectly with the whole range of facts back of the notion that the physicist is led astray in such a generalization?" One is justified in asking: "May not the evolutionist be misled in insisting that the entire story of the universe can be adequately presented as though strung along chronologically in a picture of straight parallel lines?"

One is justified in asking: "May not the materialist be misled in imputing temporal tardiness to that consciousness in terms of which alone the idea of tardiness has any certain reality?" An empiricist, reasoning from our experience with the above-and-below notion, appears to be obliged to deny to the before-and-after notion such an ultimateness that shall make it the criterion in accordance with which every other reasoning from experience is to be accepted or rejected.

The approach which we have made gives us the right to be sceptical when the materialist dogmatically uses the mind's notion of time to exclude mind from a portion of time.

6. *Hints of Limitations in the Before-and-After Notion.*—Any complete treatment of this subject will call for a search into those hints which have already made thinkers doubt the entire accord between our notion of events in time and a less localized view of the relation between the events.

Already to many thinkers does the us-centric view of existence and of the flow of events in time seem to be even more inadequate than was the earth-centric view of space.

Already to many thinkers the view of events which ranges them on two sides of a cross-section "now," athwart the universe of existence, seems to be subject to re-statement. This view seems to them to be much less reasonable than that which regarded the Mediterranean lands as a flat section through space, above and below which the universe was ranged.

Already has it appeared to many thinkers that a human being's notion of the now as the only real, a now which assumes extinction of the past and refuses any actuality to the future, is rather a thin section to serve as the sole container for the tremendous yesterdays and the portentous tomorrows. How can it be, they ask, that every iota of reality is limited to a fleeting, tenuous now, in which the past

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persists only as a memory or in transient effects, and the future has a place only by anticipation and through the slow flow of results?

Some thinkers are asking questions which suggest a link between the illusion of perspective and a possible illusion as to the intensity of reality. If, as we move along in space, things ahead and things passed by, instead of looking less large than things near at hand, which is an illusion, should look less real, might we not have the effect of proximity and distance in time? Is it not such an appearance with respect to the future and the past, of a lessened reality, that is presented to the mind when the attention is carried along by the sense organs?

Already has it seemed to many thinkers to be misleading to picture time as following a straight line with two definite and opposite directions or senses. If it be scientific to speak of time as analogous to the grain in wood, it is hardly scientific to insist that the grain has only one straight direction or sense. Possibly at periods the lines of the grain, even if they remain parallel, may be much curved, even turning back on themselves, or, perhaps, spiral-like. Did our knowledge of space come only from a sense of touch limited to the palm of a fingerless hand, our perception of space would possibly be one dimensional with only a before and after.

Already has it appeared to many thinkers that there is some imperfection in a view of time which makes it one dimensional even if it be added as a fourth dimension to three dimensional space. Possibly the wrong association of ideas by which we attempt to carry over the picture of space relations to events and occurrences is what leads us astray here. Certainly when we speak of time or of a straight line as one dimensional, we are already using words carelessly, because time as well as the straight line has two directions, and the distinction between dimension and direction is not clear. Possibly direction will have to be added as still another dimension and things will become more complicated.

Already to many thinkers has it appeared that our notion of eternity, past and future, where in a backward direction there is one infinity and in a forward direction another infinity, so that eternity equals infinity multiplied by two, must accord imperfectly with a more comprehensive view of things. There is a more recent notion of time which makes the past alone infinitely long, a so-called property of entropy terminating the flow of time at a definite period in the future. To this view it can be said that if entropy can be completed in any definite number of years, that definite number of years would have been attained long ago in the infinitude of years that lie behind us.

Already to many thinkers has it appeared that there is some-

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thing wrong with our present view of time which involves its infinite subdivisibility. This infinite subdivisibility requires that there shall be in the brief flash of time from one-millionth to two-millionths of a second the possibility of periods relatively and proportionately as varied and different as are the stretches of time measured by eras and millenniums.

Already has it seemed to many thinkers that human personality involves more than something which is obliterated with the failing breath. Possibly the entire threescore years and ten resist the erosion of time so that a man's entire biography, not his soul merely, nor his influence merely, stalks on in the great network of realities. When the human life is pictured as a flying pebble, then a fairly small stone is able to stop its flight. When, however, a human life is pictured as a great swelling tide, the stone is swallowed up in oblivion.

Already to many thinkers has it occurred that our notions of time are formed with too narrow an outlook for them to serve as molds to contain and fit every phase of reality. Possibly some phases of reality become warped and distorted when pressed into our present time molds.

7. *The Notion of Cause-Effect and of Me-Notme.*—The significant inferences from our experience with the above-and-below notion are not confined to questions as to the real essence of that which we call sequence in time. Our experience will lead us to ask about the cause-effect notion, and about the me-notme notion.

First, then, with regard to the cause-effect notion—does this notion as it appears to us correspond with the real facts to the extent that has been assumed? The question will naturally arise whether with wider viewpoints we shall see that in certain cases neither causes produce effects, nor effects causes, the reality being something quite different. All along we have had extremists who held that the cause-effect relation is a bit of metaphysics superimposed by the mind where the only real relation is that of temporal sequence. Most of such extremists have probably believed that there was enough possibility of anticipation in the temporal sequence to justify the mind's creating the cause-effect notion. It is the lack of concordance between our notion of above-and-below with the actual facts as to space as a whole, which will make the empiricist extremely cautious in accepting determinism as a dogma, or in rejecting every phase of teleology as absurd. We may even discover that there is something outside of causality, something similar to what is called purposiveness. Science did not find it difficult to provide a place for stellar motions which were quite independent of up and down.

The second interesting inference which an empiricist may draw

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from the line of argument that we have been following has to do with the notion of me-notme. The empiricist seems to be entirely justified in raising the question whether the notion of me-notme is possibly far less ultimate than it has seemed to some thinkers. Is there between the notion and the wider range of facts as complete accord as our psychology has assumed? Forever valid in the restricted situation, may it be that with deeper knowledge the me-notme notion will take on a very different aspect? The straight-line picture with the me at the infinite end in one direction with the objectively real at the infinite other end of the straight line, and with the actual world in between, may turn out to be too crude to correspond with the facts.

8. *Probabilism as a Method.*—The line of argument which we have been following reaches inferences that are quite in the mood of the scientific humility induced by man's abysmal ignorance, appalling, insistent. It is a new agnosticism which, however, differs from the old agnosticism in that it opens doors to men's hopes, instead of locking the doors already closed by materialism.

The argument calls for no discussion of profound topics and complicated formulas. Its method is to start with a definite universal experience, and using that experience as a basis, the argument justifies the putting of question marks after many of the current dogmas of materialism.

I may add my own view that our present notion of good-and-bad, while of vital value in the world as we know it now, may resolve itself into something very different and even far more wonderful in case we can deepen our insight and enlarge our knowledge. There is no reason for supposing that our present sense organs exhaust the possibility of perception, nor that our present perceptions, as marvellous as they are, must remain as they are. The reasons are many for the faith that there are things going on, involving our individual destinies, of far greater moment than our little philosophies have ever dreamed of.

The moralist of to-day is willing to present his views as probabilities. It is in the camp of the scientists that the dogmaticians are still to be found. These dogmaticians still worship at the shrine of authority, the authority of facts. The before-and-after notion is for them one of these facts. They seem not to appreciate the variability introduced into the most basic of experiences by such notions as relativity, viewpoint, preconception, prejudice, and interpretation. If Comte, the founder of Positivism, were to come to life again, he would see that the reign of Positivism had collapsed, this collapse succeeding in turn the collapses of the sovereignties of Religious Dogma, and of Metaphysics. The most notable advance all along the

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line of knowledge, religious and scientific, is being made to-day under the aegis of Probabilism.

GEORGE R. MONTGOMERY.

NOROTON, CONN.

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## PROFESSOR DRIESCH ON PHILOSOPHICAL METHODS OF PROCEDURE

PROFESSOR DRIESCH'S recent book, *Philosophische Forschungswege*,[1] is written in a distinctly German setting, which is not, however, without significance for Anglo-American philosophy. His work is concerned with philosophical methods of investigation as represented by recent German philosophers, particularly adherents of the phenomenological movement, which he submits to searching and often damaging criticism. Not much of a critical nature has appeared relating to phenomenology, which is one of a number of reasons why this work deserves the attention of the student of philosophy, and should be made accessible to English readers. In Professor Driesch's view German philosophy has been in a critical and dangerous condition for some years, because the increase of philosophical interest has been accompanied by a decrease in conscientiousness, as a result of which process great achievements of the past threaten to be lost. He traces the danger for German philosophy to three sources: first, the great increase of popular philosophy, especially of the so-called "cultural" and "historical" variety; second, the element of mysticism and the "irrational" (the "subconscious," "complexes," etc.); and third, the phenomenological method—when it gets into the wrong hands. Driesch holds this to be the greatest danger, since it is the most concealed. His discussion of philosophic movements is as valuable as it is timely, and succeeds in calling attention to the central importance of method in philosophy. Although the reader may differ with specific doctrines or with the author's standpoint, he will nevertheless be interested by the stimulating treatment of such notions as "subjective and objective," spirit, value, totality, etc. Much that is asserted by Driesch would merit discussion, but it will be sufficient at this time to take account of his comments on method and criticism of phenomenology.

Driesch makes some positive suggestions of his own in addition to submitting current philosophical attempts to criticism. It is his contention that if philosophy is to lead in the realm of thought, it must set up problems and *possible* solutions. It then becomes the task of science to follow up this procedure and to decide factually

[1] Hans Driesch, *Philosophische Forschungswege: Ratschläge und Warnungen*, Leipzig, 1930.

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upon the solutions proposed by philosophy. This means that the philosopher must treat all factual problems independently and originally. Philosophy and science thus supplement one another: the philosopher furnishes the results of his study of possibilities to investigators in fields that are still unclarified, and he receives in turn new material for his study of possibilities. What Driesch proposes amounts to a "methodology" for fruitful investigation, and he thinks it possible to make certain suggestions to that end. Pointing out the importance of first determining the goal of philosophy, he holds that all philosophy worthy of the name is in the first place the orderly apprehension of the content of experience, and that it can not be anything else to begin with, even though it may later raise metaphysical questions. Philosophic studies of possibilities are not working hypotheses, although they may involve them. Their domain is much wider, and goes into the unknown in so far as that is "possible"—i.e., is thinkable without contradiction under the circumstances. A working hypothesis may be dropped because of new evidence, but the philosopher has simply failed if a new empirical datum undermines his region of possibility. The study of possibility requires an examination of the nature of causality and of experiential data. That Driesch is thoroughly objective in the use of his method is shown by the precept which he stresses, "Be guided by the object." It follows from this that one should first determine the real nature of the objects under consideration, as, for example, in the case of heavy bodies, history, the concept of motion, knowing, inference, etc. Thus the investigation requires the determination of what is commonly called a universe of discourse. After proceeding to classification and analysis in search of the "elementary constituents," the question that arises is, "How is the object related to other objects, or what is its environment?" The latter may consist of purely logical, or empirically real, or metaphysical relations.

The philosopher forms a concept of a field of reality, and asks whether it is dependent upon any other concepts. Driesch construes the field of reality as a consistent system, maintaining that no proposition referring to real things may violate the fundamental principles of formal logic and arithmetic. It will be agreed by most philosophers that this is a thoroughly reasonable point of view (in fact, its denial would commit a person to a non-reasonable point of view by definition). With regard to their basis in experience, these principles are probable but not apodictic. The descriptive aspect of the world is never complete and certain, and the principles of logic and arithmetic may be founded only with the aid of a number of fundamental ideas and assumptions. Driesch touches upon a troublesome question at this point, a question which concerns the

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nature of formal science: Is it possible to determine any formal description of the world of experience which will hold exclusively for it? The case for logic and arithmetic seems unquestionable; can the same be said for geometry? Driesch believes that it can, for he regards geometry ("geo"metry) as the genuine science of space, and not as a mere relational science. He argues that the general theory of relativity as a physical theory, and not as a mathematical schematic form, therewith becomes "impossible." For everything that contradicts logically intuited essences is impossible, and space is in his view essentially Euclidean. This is indicative of his philosophical standpoint as well as of his view of formal reasoning. Driesch holds that space is "intuitive," and challenges any one to see or intuit "curved" space. He holds that philosophy must here pronounce its veto and point out that space as space does not permit of "curvature" any more than $2 \times 2 = 5$. Such arguments obviously assume a narrow view of perceptual possibility. Either *actual* perception may be meant, and that does not give such knowledge as syllogistic, etc.; or else perception of "essential" connections, which goes beyond the content of any amount of actual experience and rests ultimately upon special assumptions. Driesch speaks of essential connections. Essences must be defined relationally; but it is impossible to imprison a set of facts in one necessary relational context or system. The claim that particular facts may be grasped in an essential generality may be said to be impossible "essentially." To a certain extent philosophy must rest content with generalizing upon the basis of the special sciences. That certainly holds true for the natural sciences. Its mode of procedure must be *regressive* with respect to the findings and concepts of the special sciences, and it can only be *progressive* in its method after taking account of them —i.e., philosophy can then begin on its own with a systematic study of the nature of reality and the conditions of knowledge. It must proceed very cautiously when suggesting a revision of any of the fundamental ideas of the sciences, and it must make sure not to confuse the explanatory with the descriptive aspects of science. Driesch appears to be too positive in his attitude when making decisions for the special sciences. Speaking of the concept of matter he states that "something" must be there in order to have transformations of energy, regardless of how the physicist defines that "something," an assertion to which no objection will be made provided the philosopher does not have the category of substance in mind.

As was to be expected, Driesch makes application of his view of possibility to the issue of mechanism and vitalism. He believes that biology has made an error in scientific procedure and has retarded its progress by setting up a dogmatic and incomplete doctrine of

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causality. It "questioned" only within the limits of physico-chemical causality, thus predetermining its findings. Asserting that what is biologically essential is thus not found, Driesch justifies his emphasis upon the study of possibility. Speaking of the vitalistic problem, he rules out the notion of a "pre-formed material structure" as an impossibility. Protesting against the violation of logical principles which he holds to be self-evident, he presents the mechanistic argument in the form of an invalid syllogism: "All mechanical occurrences are uniquely determined, and all vital occurrences are uniquely determined; therefore all vital occurrences are mechanical." That the mechanistic thesis may be stated in strict postulational terms, in which allowance is made for the organization of life and its specific behavior, thus avoiding a crude syllogistic error, is another matter, which need only be mentioned at this point. Hence the mechanistic position itself is not disposed of therewith, and Driesch has not indicated the only possible alternative to extreme mechanism.

What Driesch proposes is a foundation for philosophy by means of a well-defined method which is guided by the facts, and also defines the conditions under which facts can occur. The phenomenological philosophy has pretended to found philosophy in a certain manner and lay the basis for the sciences. Maintaining that the phenomenological movement constitutes a danger, Driesch nevertheless admits that it has an earnest and worthy side, although it is easy to transgress beyond that. As a method he holds phenomenology to be misleading because it promises good results without much effort. Every one believes he can "see," but few know how to direct the process properly. He considers the categories of the "pre-given" to be the greatest danger on the part of phenomenology, a danger of Neo-Romanticism which is worse than the old movement, because it is presented in language that sounds scientific. It appears to him that the critical work from Descartes to Kant has been done in vain for those philosophers.

Phenomenology is in Driesch's opinion a new term for old philosophical interests. He is right in pointing out that a part of present-day phenomenology is descriptive, introspective psychology, even though the phenomenologist seeks the "essence" of perception, etc. The usefulness of such procedure as constituting a preparatory stage of work for psychology (a "pre-psychology") may be admitted while questioning the pretension implied by the term "essence," in the sense of ultimate existential characters of the world. It is true that individual people differ in the particular manner in which they experience a thing, whereas that which is "meant" by means of the concept that is posited is the same for all. In this sense there is

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genuine empirical perception, memory, etc. But as Driesch points out, that is not "*a priori*," and nothing follows from the concept that is posited apart from what is laid down by means of its definition. It is said by phenomenologists, by Husserl, for example, that the concept of memory involves essential reference to an earlier experience of the same person. The proposition that "memory refers back," which is an example of a "law of essence" in phenomenology, would thus appear to be an analytic and entirely empty judgment. A second aspect of phenomenology, which Driesch cites with some approval, is concerned with the investigation of ultimate experienced meanings and the "*a priori*" connections that may be discerned in them. He calls this discipline the doctrine of the "fundamental principles of order," or "ontology" in an unmetaphysical sense. Husserl conceived this kind of phenomenology originally, and it is admittedly a rigorous science. Then Husserl proceeded to the consideration of "kinds of acts," which led to a new stage of phenomenology. Driesch's admission that all mathematics is included in the field of these meanings may be questioned, unless it is made perfectly clear that actual experience of any kind is irrelevant to the meanings. It appears obvious that the technique of symbolic logic has made little impression upon German philosophy, despite the fact that Husserl himself began as a mathematician and spent considerable time in his early period on studies which paralleled the Peano-Whitehead development to some extent. Finally, by phenomenology is meant the precise analysis of certain concepts with empirical reference, whether physical, psychical, or psychophysical in character. In this sense phenomenology appears as the determination of definitions of such terms for example as "state," "animal," "life," "force," "association," "perception," etc. These, too, are supposed to be investigated as "essences." Driesch points out the difficulties in the way of describing such empirical essences. In contradistinction to the connections of meaning of logic and mathematics, there is a provisional element in empirical knowledge, for hypotheses are set up and may be improved or changed. Phenomenology fails to solve the problem of determining that which is fundamentally essential in an empirical sense. This difficulty should not discredit it in its entirety; but its pretension to discern essences in all fields must be abandoned as groundless. Husserl, who maintained the difficult notion of essence despite much criticism, would have done better to drop the term itself even when citing its most striking and plausible examples in formal reasoning. "Possible relations" or "patterns" would be truer and less assumptive language. The extravagances to which some of his followers are led in other fields, such as in legal

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and social philosophy, have been apparent in recent publications.[2]

In examining the "ontological" aspect of phenomenology, Driesch emphasizes the fact that *meanings* and their connections alone are apprehended. That they appear in empirical contexts does not matter; the "now" and the "here" are eliminated. The "essences" are apprehended, and they are not to be treated as empirical reals, nor regarded as general concepts derived through abstraction from the knowledge of real things. The apprehension of essences of organic life, masculine and feminine, etc., in an *a priori*, formal sense, is denied by Driesch, the only acceptable interpretation of such essences being the determination of the possibilities which follow from the fundamental meanings. Although it is true that all that is possible in experience could have been established *a priori* as a possibility, Driesch asserts that there is no time for a theory of the "possible" kinds of pure spirits, or for an ethics for our attitude toward ghosts and devils. For the rest, that which is determined as a form of essence in this manner is not yet shown to be essential to the world, which is the point of real interest.

This is well-founded criticism of the phenomenological tendency, and it appears most just and necessary in the empirical sciences. However, allowance must be made for the treatment of pure forms as possibilities which may find an exemplification in experience. It would be misleading to speak of such forms as "*a priori*," since they are derived through abstraction from actual occasions of experience, to begin with, and their holding-value is purely formal and relative to certain basic assumptions. Inasmuch as the historical meaning of the "*a priori*" is objectionable, claiming more for scientific knowledge than the evidence warrants, it would be better to avoid use of the expression under any conditions. Driesch's criticism is timely in pointing out the fruitless and erroneous nature of the *a priori* study of essences in the field of empirical fact, and the error of attempting to "deduce" all particular things from general, *a priori* concepts. The necessity of such criticism is illustrated by the *a priori* "intuition" of such an adherent of phenomenology as Scheler, who held that the essence of man could be discerned, and that from this apparent intuition it may be deduced that men must have sense-organs. That would be justified if it were advanced as a hypothesis, in the view of Driesch. On the basis of what is known empirically one may set up suppositions concerning a world-plan in which man has a place. Thus on the *hypothetical* assumption that man is to play this rôle in a *supposed* world-plan, he would have to be constituted just as he happens to be, which weakens the notion of essence materially. Apodictic and *a priori* claims are clearly

[2] Cf. M. Farber, *A Review of Recent Phenomenological Literature*," this JOURNAL, Vol. XXVII (1930), pp. 337–349.

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baseless in this case; and it is an error to confuse that which is learned empirically with its possibility as an *a priori* matter, as Scheler seems to do.

The phenomenologists' use of the notion of "pre-given" entities is sharply questioned by Driesch. From the standpoint of possibility, our world is one of an infinite number of possible worlds. But mere *a priori* possibilities do not help much, as is seen in the case of angels or ghosts. What we know of our world is derived empirically. How, then, can we speak of something as "pre-given"? In the sense of a formal construction, only "object-in-general" could be regarded as pre-given, but that would not apply to "nature" or "empirical reality in space." As Driesch states it, an indefinite number of "categories" is pre-given—i.e., every thinkable combination of the fundamental meanings, such as order, this, such, relation, so much, because, whole, the so-called qualities, beside, then, etc.; and for that reason *nothing in particular* is pre-given. Both the criticism and positive suggestions of Driesch are effectively stated. In point of method, however, an analysis of the cognitive situation into its formal and "material" elements may be suggested, on the basis of which the general presuppositions that are involved by an act of knowledge as such are distinguished clearly from the special assumptions of the sciences as organized bodies of knowledge. There can be no "pre-givenness" in either an empirical or logical sense. But we do make presuppositions that are suggested and required by the given field of experience.

In view of Driesch's treatment of the idea of possibility, it is strange that he does not fully recognize the proper nature of formal reasoning. He asserts that mathematicians frequently overlook the element of "quality," particularly in the theory of aggregates, and that it is a fundamental logical error to treat infinite magnitude as a number. He also protests against the notion that a two-dimensional figure may be regarded as equivalent to a line, for he believes that they differ qualitatively from one another and that the one-to-one correspondence of their points is a minor quantitative matter. That the introduction of the vague idea of quality would be a new kind of "danger" may be suggested to Driesch. The principles of the theory of aggregates follow from the basic postulates and present no special problem for philosophers, unless such a general question as the relationship between perceptual and conceptual space is raised, in which case an answer along the lines of Professor Whitehead's method of extensive abstraction would be much more adequate than the introduction of such a questionable idea as "quality."

It may be well, finally, to enlarge upon Driesch's leading question and ask, what is really wrong with philosophy? Before one decides

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on the dangers of philosophy it is pertinent to inquire concerning its importance in the world at large and the extent to which its utterances make a difference. It has little practical influence in the Anglo-American world, and it appears that Driesch has over-estimated the significance of philosophical movements and tendencies for the German people as a whole. The intellectual games that may be played, the revival and modification of superannuated ideas and standpoints, the idiosyncrasies of individual thinkers as well as their blunders and occasional verbal monstrosities—these make no more impression on people generally than do the really worthy examples of philosophic thought. The usual ventures of philosophy touch only remotely the principal problems that confront human society. They may be "eliminated" as belonging to the factual realm if one follows Husserl in the use of the phenomenological method, or they may be ascribed to unclear thinking. For, it has been said, is not clear thinking prerequisite to right conduct, and are not the philosophers specialists in clear thinking? It would follow that our first task must be the achievement of unity among philosophers in order to prepare the way for just action. This ultra-rationalistic attitude has had its adherents. The strife among philosophers is proverbial. One thinks of logical, illogical, and non-logical philosophers. But even if unity among philosophers could be achieved, that would make little difference in the world at large, and certainly not in respect to the basic problems relating to society. This judgment is based on the nature of most of the subjects that interest present-day philosophers, and on some of their utterances at the time of the World War. It would seem that universal agreement among nations and internal harmony in each country are prerequisite to agreement among philosophers. That a thoroughly scientific philosophy, realised in a universal system of education, would be effective must be granted. However, such an ideal plan presupposes ideal conditions. Philosophy holds up the ideal of universal happiness, but the best that it can offer is renunciation. Small wonder, then, that it retires to its own special problems with a specially invented terminology, differing sometimes from case to case, and to its peculiar methods. The phenomenologists desire certainty to begin with, but fail to achieve it. They would do much better to begin with the ineradicable problems of experience, which should satisfy the demand for certainty. The danger incurred by "pure" philosophizing is that one may forget the primary purpose of knowledge, which is control by man over the natural environment and human relations. Philosophers may rightly attempt to improve the real world, which is "given" in the sense that it can not even be wished away; but they should not try to improve upon the real world unless they make it clear that they are resorting to fantasy.

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Although quite helpless when confronted by the most important social problems, philosophy does have a certain amount of significance for science, mainly because of the development of logic. In some cases it continues to be the handmaid of theology, or, again, it attempts to make provision for religious faith. It is sufficient to mention the attempts to construe religion in terms of moral value, and the attitude that "a person may believe as he pleases," which is restated in philosophy as the privilege to justify implicit faith in transexperiential and ultimate matters on the pragmatic ground of their agreeableness. This is one of the few points at which philosophy makes contact with human society. Survival plays an unusually large rôle in philosophy, as is illustrated by the highly eclectic nature of most systems, and the persistence of the tradition of spiritualism. Spiritualism has been and continues to be in many places the dominating philosophical preference for colleges and universities, with the result that traditional "schools" tend to be perpetuated at the expense of a growing scientific philosophy. This suggests another "danger" for philosophy.

The "ultimate meanings" of both Driesch and the phenomenologists indicate the deductive ideal of philosophy. Guided by the principle of parsimony in admitting ideas as ultimate, it becomes the task of philosophy to clarify them. On the purely descriptive side, one set of postulates can not be adequate for the foundation of philosophy and science, for special postulates must be added as the subject-matter and facts require them. Underlying all ordered knowledge there must be general assumptions of uniformity and order. For this reason there can be no final truth or proof in a theoretical sense; but practically the descriptive basis of knowledge and the deductive fictions that are employed work well enough Philosophers should at last recognize candidly the essential limitations of the cognitive enterprise, limitations which we at once accept and ignore when we speak of "practice." In a significant essay which appeared in *Logos* in 1910, "Philosophy as a Rigorous Science," Husserl sketched the ideal of a thoroughly scientific philosophy, which would be justified step by step in the rigorous manner of a deductive discipline. Philosophy has not tended to approach that ideal to any great extent; nor has Husserl for that matter, it may be added. Assuredly the path of philosophy is beset with dangers.

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## BOOK REVIEWS

*General Introduction to Ethics.* WILLIAM KELLEY WRIGHT. New York: The Macmillan Company. 1929. Pp. xv + 559.[1]

The author of *A Student's Philosophy of Religion* has provided the American college teacher with a companion volume, designed as a textbook for introductory courses in ethics, and embracing a very wide range of topics. Professor Wright has interpreted the word "introduction" in liberal fashion: he begins with social anthropology and ends with metaphysics and religion. Here we have a book simpler than Dewey and Tufts' *Ethics* and wider in scope than G. S. Fullerton's *Handbook of Ethical Theory*. It lays no claim to great originality, not professing to be other than a text for beginners. On most questions it adopts a sane middle position, but does not obtrude unduly the personal predilections of the writer. This absence of dogmatism and controversy is bound to alienate extremists both of the Right and of the Left. The former will deplore the pragmatic and evolutionary tendencies and the refusal to insist on the absoluteness and eternality of "values"; the latter may regard the author as a rather old-fashioned and tender-minded idealist, clinging to outmoded positions. But this avoidance of extremes and preference for compromise should appeal to the average teacher acquainted with the needs of hot-headed and over-enthusiastic youth, which requires a restraining influence on its reforming zeal.

The book is carefully planned. It is the fruit of some twenty years' experience of teaching ethics to American students and has been subjected to the test of the class-room. Great pains have been taken with the writing and proof-reading (arētē for arĕtē on page 93 and parapetetic for peripatetic on page 116 are the only errors noted) and every possible simplification of language has been effected. This tends to make the style somewhat dull and colorless, but no one can complain of lack of clarity. The book is intended to provide material for a complete year's course; and in the Preface the author advises taking Parts I and III, supplemented by readings from the classical moralists, in one semester, and Parts II, IV and V, together with readings from contemporary writers, in the other.

The contents of its five parts are fairly easily summarized. Following on a brief introductory chapter, Part I deals in two divisions with Comparative Ethics. This is the largest section of the book and mainly historical. Division A (Social and Moral Evolution) begins in chapter II by outlining the three main stages of social development, Kinship (with its three sub-types, The Primitive Horde, The

[1] For the lateness of this review, due to a variety of causes, the reviewer is solely responsible and owes an apology both to the editors of this JOURNAL and to the author.

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Maternal System or *Mutterrecht,* and The Paternal System or *Vaterrecht*), Authority, and Citizenship. Chapter III then discusses the parallel stages in the evolution of moral ideas and stresses three general tendencies or characteristics of the whole evolution, *viz.,* Socialization, Individualization, and Rationalization, all mutually compatible. A chapter on Hebrew moral development concludes this division. Division B (Occidental Ethical Evolution) deals with the Greeks and Romans, Christianity, and Modern Europe. Perhaps too much space is allotted to this historical material at the expense of later parts, particularly III. On the whole, it is ably done, though there are places, such as page 144, where we feel inclined to dispute the author's judgment. There we find the statement: "The first-century Christians in most cases had little education. Even the learned Paul could not write good literary Greek. There was neither time nor opportunity to cultivate the intellect and acquire 'wisdom.'" Surely this is an over-statement? Is it borne out by the facts of Paul's life or a reading of his Epistles? Are Romans 8 or Corinthians I, 13 not good literature? Why should Paul have been expected to write in Attic rather than in the Hellenistic language of his own day? A more serious criticism is that the attempt in this Part at broad generalization upon data drawn from so many diverse epochs and cultures yields rather trite and jejune results. It is the details of a culture that make it interesting. But there is excuse for occasionally attempting such a broad and sweeping survey.

Part II (Psychology and Ethics) has three chapters, dealing respectively with Sentiments, Virtues, and the Self. It is well done, and the identification of the virtues with good sentiments seems to be a novelty. On the whole the terminology and treatment follow and summarize McDougall fairly closely. By using the term "primary impulses" for what McDougall called "instincts" (which have allied with them simple characteristic emotions), Professor Wright avoids prejudging the question of their innateness or modification by habit and training. But his own view is on the side of instinct and inheritance, though he is willing to concede to the behaviorist their modifiability in certain important respects. To Aristotle's list of the virtues he would add and lay stress on the virtues of "economy" and of "reverence." The chapter on the Self, after distinguishing between the transcendental "I" and the empirical "me," concentrates on the latter and concludes with a brief and non-committal discussion of the Free Will problem.

Part III (Systematic Ethics) compresses into 74 pages the material which forms the bulk of most older textbooks. One can not but regret the condensation, even though the essentials are retained in what is a very neat summary of the historical systems and prob-

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lems, and though space is thereby provided in the volume for new and interesting topics. Its four chapters are entitled Intuitionism; Formal Ethics: Kant; Utilitarianism; and Eudæmonism; the last, which is the position favored by the author, being also designated by the terms "Self-realization," "Happiness," or "Welfare." His view, however, is somewhat eclectic, admitting certain fundamental ethical intuitions. Kant's system is criticized largely on the score of its *formality*. With universalistic hedonism he is more in sympathy, and indeed his own view represents a "working compromise" (p. viii) between utilitarianism and a more idealistic form of teleological ethics which places greater emphasis on intellectual, esthetic, and religious "values." Pleasure or "happiness," the utilitarian criterion, is admitted as a rough and ready criterion of good, though not altogether reliable. He refuses to call any human values "absolute" or "eternal," and is inclined to doubt whether there are any intrinsic values which are not also instrumental. Here he tends to approximate to the position of Dewey and others.

Part IV (Political and Social Ethics) has chapters on the State, Distributive Justice, The Professions and Business, and the Family and the Position of Women. There is little in these chapters of the traditional political philosophy which analyzes and traces the development of the concepts of sovereignty and obligation. (It was probably excluded as beyond the scope of elementary treatment.) They follow the lines of McIver and other writers on political science and social and business ethics. In some respects they are the most novel and interesting chapters in the book and contain acute reflections and judgments on the social life of present-day America. If they are on the side of optimism it must be remembered that they antedate the Depression!

The concluding chapter, which constitutes Part V and deals with the metaphysical and religious presuppositions and implications of ethics, does not do more than introduce the student to these wider problems. Detailed references for further reading are given at the end of each chapter, the more elementary being asterisked. All notes and fuller references for teachers are relegated to the end of the volume. A good deal can be said both for and against this arrangement.

Perhaps Professor Wright has attempted to include too vast a range of topics within the covers of a single volume and his treatment suffers accordingly from generality and in places a certain sketchiness. The English tradition of philosophical teaching insists on introducing the student from the start to the classical philosophers and allowing him to wrestle with the difficulties of interpretation for himself with such aids as the teacher may give. While convinced that this is the best method and ultimately the most beneficial, and that the ideal is

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to dispense with even the best kind of textbook (the function of which the teacher should supply), the present writer admits the practical difficulties in the way of realizing this ideal under the conditions of American college teaching. The hard-pressed teacher is often unable to supply the unifying thread and the factual basis which such a textbook provides, and English critics often display a lamentable lack of knowledge of the actual background—or lack of background—possessed by the average sophomore or junior who approaches such topics. One hopes that perusal of such a book as this will stimulate the student to study for himself the non-asterisked references at the ends of the chapters. If Professor Wright has perhaps made the path appear too easy, and slurred over some bitter controversies of the past with skillful compromise, he may have helped many to an acquaintance with ethical problems who would otherwise have been doomed to ignorance, and some will be led to go further and dig deeper. It is a pity that he should not have noticed more fully the difficulties which critics for the past thirty years have been urging against self-realization as an ethical criterion, difficulties implicit in the ethical systems of Green and Bradley. But he has given us generously of the results of his wide reading and teaching and his mature reflection on human life.

ALEX. J. D. PORTEOUS.

UNIVERSITY OF EDINBURGH.

*Aristotle's Psychology of Conduct.* A. K. GRIFFIN. London: Williams and Norgate, Ltd. 1931. 186 pp.

Between the scorn of those thinkers who have never forgiven Aristotle his long ascendancy (for which he can not rightly be blamed) and the interpretation of others who have stressed the elements of his thought in virtue of which the ascendancy occurred, Aristotle's writings only rarely receive objective expository scrutiny independent of initial bias in some direction or other. However difficult the attempt, I am inclined to think that valuable work on Aristotle at present lies not so much in synthetic commentaries on separate books as in piecemeal analysis of individual topics. It would consist in bringing together all he says on the special subject in the various books, and determining as far as possible exactly what he is trying to say, not, for example, where he is trying to anticipate Hegel or even the traditional Aristotelians. Such painstaking study would do much to prepare the ground for a future comprehensive work on Aristotle's philosophy which will be more than refined paraphrase.

Professor Griffin's book is an example of this kind of careful research, with a tendency, however, having limited its field, to think

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it therefore independent. "It is one of Aristotle's glories," we are told in the preface (p. 10), "that he has cut ethics and politics loose from metaphysics and founded them solidly on psychology." This fails to realize that Aristotle's whole conception of nature and man's place in it is a necessary metaphysical prolegomena to a discussion of man's nature and the emotions which constitute its raw material. Without this, and the application of the distinction between matter and its form, or the potential and its actualizations, his whole ethics would collapse into an identity of the normative and the descriptive. It is only when one has decided that the good with reference to a particular nature is the organized realization of the potentialities it includes that one can begin an examination of these potentialities as raw material and their possible forms. And in man's case, the matter is the emotions; their possible forms are habits and virtues. Professor Griffin's own excellent chapter arrangement (the central three are "Human Instincts and Emotions," "The Formation of Character," and "Habits of Character") itself reflects the formal structure of matter, mode of actualization, and alternative actualizations.

There is an attempt on pp. 127–128 to show that Aristotle was so averse to mixing metaphysics with ethics that owing to Platonic associations he avoids "the good" (*τό ἀγαθόν*) in favor of "the noble" (*τὸ καλόν*). In the *Nicomachean Ethics* at least, a different distinction of the terms offers a more probable explanation of the usage. "The noble" will be found in discussion of isolated ends just as the courageous man acts for the sake of the noble; "the good" enters when the ends are organized rationally as the human goal. The distinction is therefore primarily psychological, relative to the formation of character and the flowering of practical reason. Before we discern a possible plan to human life, we may still single out separate goals as ends in themselves, which appeal to us as "noble" or "fine" without reference to any general pattern. This recognition may rest on imitation or some congruence with inner ideal. But once such an end is seen as part of a general scheme of happiness, its character as "good" becomes predominant.

Within the limited field which the book sets itself there is a careful collation of passages from the ethical writings and the *Rhetoric*. (For the most part Aristotle is left to speak in his own words or rather the Oxford edition's version of them.) Some of the critical parts are clarifying. Especially so is the discussion of "wish" and "choice" in Chapter II (pp. 27–34). The account of "nature" in Chapter III (pp. 40–45) is adequate in its application to desires, the distinction of the "fundamental from their later and more specialized developments," and the stronger from the rest; but it is theoretically misleading. It could have gained much by an in-

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corporation of the relevant remarks in *Physics* II (to which there is a reference), where there is an excellent analysis of the meaning of the term, not a superficial personification. The description of the emotions keeps in mind what is here most important, to avoid their confusion with habits or states of character; for that would be a mixing of matter and form.

"Practical wisdom" is fully treated in dealing with the formation of character. The problem is in what sense Aristotle meant it to reckon with means, in what sense with ends. The account here is suggestive: it allies practical wisdom with "wish" as "the mental operation which gives to wish the light of reason" (p. 118). Aristotle ". . . thinks of practical wisdom as the successful process of search, reasoning, calculation, and reflection, which, starting with the end, tries various subordinate ends and the means to them, until, finding the right ones, it picks out the next particular act which will lead to the final desired end" (p. 122). It is therefore concerned with both means and ends, but only when there is an ultimate ref-rence to the complete human good. Otherwise it would be a mere cleverness.

The habits of character, or virtues and vices, are summed up in the following chapter. The limitations of such a discussion from solely a psychological standpoint are obvious; habits and character are to a preponderant extent environmentally and socially conditioned. All that can thus be done is to indicate upon what emotion or emotions each kind of habit rests. The inadequacy of such a treatment is especially apparent in the summary of justice, where a psychological enquiry rests satisfied with the discovery that particular justice is concerned with a general desire for gain. Parts of this chapter lead one to wonder whether it might not have been more enlightening to select a few examples of habits and show the relation of their psychological to their ideological and social aspects, rather than merely to point out the psychological basis of a great variety of habits.

ABRAHAM EDEL.

COLLEGE OF THE CITY OF NEW YORK.

*The Development of John Stuart Mill's* System of Logic. OSKAR ALFRED KUBITZ. (Illinois Studies in the Social Sciences, Vol. XVIII, Nos. 1–2.) Urbana: The University of Illinois. 1932. Pp. 310.

Our anti-intellectualists have taught us that the formal logic of the textbooks is an anachronism maintained in the universities by an entrenched majority of medievalists and inquisitors. It is fun to be reminded, therefore, that this "Aristotelian" logic is the really brave innovation at modern seats of secular learning, and that for

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centuries the uncompromising official creed of the pedagogue has been a lush "logic for use," a pragmatic, instrumental, practical, empirical, experimental, humanistic, biological, or psychological logic. Dr. Kubitz gives us this reminder in the process of exhibiting John Stuart Mill, the arch empiricist, as a veritable intellectualist and realist against the background of the psychologism of his forebears.

It is easy to suspect that Dr. Kubitz is not a confirmed logician nor yet a metaphysician. His essay appears as a "study in the social sciences." It avows an especial interest in Mill's logic as a methodology for political economy, and it confines itself to the writings and uses the terminology of Mill, his contemporaries, and his Scotch and English predecessors. It makes little reference to scholastic logic and almost none to specifically modern developments. Since the terminology, like the philosophy, of Mill's era was particularly undecided and indeterminate, this course does not make for perspicuity; and it may startle the latter-day reader to discover among elaborate analyses of opposed views on the reality of kinds or on the validation of axioms (such as the parallels postulate in geometry) no intimation that the question is not still just where Mill and Spencer left it. Dr. Kubitz's business, however, was to portray Mill's logical biography in the setting where it occurred, and this he does in a thorough fashion, with a profuse and competent documentation.

After a preliminary account of early logical influences in Mill's life, he discusses for us sundry antecedents and affinities of successive doctrines of the *System*. His principal topics are, by chapters: (ii) the relations of logic and psychology, and Mill's doctrine of terms and classification; (iii) the syllogism, and Mill's account of reasoning as from particulars to particulars; (iv) induction, or the search for premises, and Mill's insistence on the causal principle as its indispensable condition; (v) the development of the "complete method" as the logic of the moral sciences; and (vi) Mill's doctrine of the empirical justification of axioms, as against both the nominalists and the intuitionists. Mill's logic is thus expounded as an important stage in the assimilation of the methods of the physical sciences to the materials of society and politics. Mill, it appears, was a valiant associationist as against the common sense of the Scotch intuitionists, but he held enough of a filial grudge against the rigors of his father's associationism to amend it on one side by the insistence that there are rules of evidence which *justify* belief irrespective of the stringency of the psychological processes which *cause* belief, and on the other side by emphasis upon the difficulties of the deductive method expounded by the elder Mill. At nearly every

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juncture Mill's subjectivistic metaphysics is shown in conflict with an irrepressible propensity to realism.

The climax of the *Logic* is the "complete method," an indissoluble partnership of "induction" and "deduction." This Mill persistently advocated, not as his original discovery, but as the gist of the results of British logic. Dr. Kubitz helps us to examine the complete method and collates it with kindred expositions, but he hardly shows that either he or Mill was entirely clear on the precise interrelations of such phases as "hypothesis," "explanation," "verification," "subsumption," or even "induction" and "deduction."

There is an annotated bibliography, admirable within the limits of its concern, but the index of proper names is not as useful as an index of subjects would have been. The book has uniformly the laborious and plethoric aspect of the academic dissertation. It averages 4.55 footnotes per page, and abounds in quotations, digressions, repetitions, propaedeutics, and specious sections and subsections. Because of a certain indiscriminateness and the looseness of its texture, it impresses one more as a rich store of raw material than as a finished product with a clearly defined thesis. This, however, is perhaps not regrettable in an age which has seen too much good raw material spoiled in the making of "original" bric-à-brac. And certainly it is not fair to indulge in fantastic reflection on how much further along we should be if either Mill or Dr. Kubitz had read *Mind and the World Order.*

DONALD C. WILLIAMS.
UNIVERSITY OF CALIFORNIA AT LOS ANGELES.

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## JOURNALS AND NEW BOOKS.

REVUE DES SCIENCES PHILOSOPHIQUES ET THEOLOGIQUES. Tome XXI, No. 3. "Antisthenica": *A.-J. Festugière.* Bulletin de Science des Religions: *P. Synave, E.-B. Allo.* Bulletin d'Histoire des Doctrines Chrétiennes: *M.-D. Chenu, C. Dumont, A.-M. Jacquin, M.-J. Congar, H.-M. Féret.* Bulletin d'Archéologie Chrétienne: *R. Vielliard.*

THE PERSONALIST. Vol. XIII, No. 4. Tools and Culture: *C. M. Case.* The Meaning of Biological History: *F. C. S. Schiller.* Determinism, Freedom, and Personality: *T. H. Tuttle.* Scientific Revolution and the New Day: *R. T. Flewelling.*

Arcari, Paola Maria: Obbligatorietà Morale e Obbligatorietà Giuridica. (Studi dell'Istituto di Diritto Publlico e Legislazione

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Sociale della R. Università di Roma. XI.) Rome: Anonima Romana Editoriale. 1932. 145 pp.

Proceedings of the Aristotelian Society, 1931–1932. New Series, Volume XXXII. London: Harrison & Sons, Ltd. 1932. 342 pp. 25 s.

Achille-Delmas, F.: Psychologie Pathologique du Suicide. (Bibliothèque de Philosophie Contemporaine.) Paris: Felix Alcan. 1932. xi + 237 pp.

Browne, Lewis: Blesséd Syinoza. A Biography. New York: Macmillan Co. 1932. xiii + 334 pp. $4.00.

Cornford, Francis MacDonald: Before and After Socrates. Cambridge: At the University Press. 1932. New York: The Macmillan Co. 1932. x + 113 pp. $1.50.

Hasse, Heinrich: Schopenhauers Religionsphilosophie und ihre Bedeutung für die Gegenwart. 2. Auflage. München: Ernst Reinhardt. 1932. 49 pp. 1.50 M.

Heimann, Eduard: Sozialwissenschaft und Wirklichkeit. Zwei soziologische Vorträge. Tübingen: J. C. B. Mohr (Paul Siebeck). 1932. iii + 67 pp. 2.40 M.

Wolfson, Abraham: Spinoza. A Life of Reason. New York: Modern Classics. 1932. viii + 347 pp. $3.50.

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## NOTES AND NEWS

The Brentano Society has recently been founded in Prague, Czechoslovakia, having as purpose the preservation of the philosophical remains of Franz Brentano, the encouragement of research of the contributions of Brentano, and the publication of a definitive edition of his works. This publication has now reached the tenth volume, and is being brought out by the house of Meiner, Leipzig. With the help of President T. G. Masaryk, himself a former student of Brentano's, the Society has established its headquarters and the archives of Brentano's manuscripts at U Vozovky 1218, Prague VII. Among the officers of the Society are Professor Oskar Kraus, of the German University of Prague, President, and Professor Alfred Kastil, of the University of Innsbruck, Vice-President. Valuable assistance in the establishment of the Society has been rendered by Dr. J. Brentano, only son of Franz Brentano, at present at the University of Manchester, England.

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Reason as Fact and as Fetich (II). HORACE M. KALLEN.
A Notation on the Problem of the Past—With Especial Reference to George Herbert Mead. ALFRED TONNESS.
Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 23. November 10, 1932.**

On Having Ideas in the Head. DONALD C. WILLIAMS.
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Quarterly. Child behavior, differential and genetic psychology. Founded 1891.

**Genetic Psychology Monographs.**—Worcester, Mass.; Clark University Press.
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Monthly. Each number one complete research. Child behavior, differential and genetic psychology. Founded 1925.

**Psychological Review.**—Princeton, N. J.; Psychological Review Company.
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**Psychological Bulletin.**—Princeton, N. J.; Psychological Review Company.
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Monthly. Founded 1904. Edited by Samuel W. Fernberger.

**Psychological Monographs.**—Princeton, N. J.; Psychological Review Company.
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Published without fixed dates, each issue one or more researches.

**Journal of Applied Psychology.**—Baltimore; Williams & Wilkins Co.
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Quarterly. Edited by James P. Porter and William F. Book.

**Psychological Index.**—Princeton, N. J.; Psychological Review Company.
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An annual bibliography of psychological literature.

**Archives of Psychology.**—Columbia University Post Office, New York.
Subscription $6.00. 500 pages per volume. Founded 1906. Edited by R. S. Woodworth.
Published without fixed dates, each number a single experimental study.

**Journal of Abnormal Psychology and Social Psychology.**—Eno Hall, Princeton, N. J.
Subscription $5.00; foreign $5.25. Acting Editor, Henry T. Moore.
Quarterly. 432 pages annually. Founded 1906. Abnormal and social.

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**Journal of Comparative Psychology.**—Baltimore; Williams & Wilkins Co.
Subscription $5.00. 500 pages annually. Founded 1921.
Bi-monthly. Edited by Knight Dunlap and Robert M. Yerkes.

**Psychological Abstracts.**—Princeton, N. J.
Subscription $6.00. 700 pages annually. Edited by W. S. Hunter.
Monthly. Abstracts of psychological literature. Founded 1927.

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# THE JOURNAL OF PHILOSOPHY

## THE MISSING LINK IN EPISTEMOLOGY

DUALISM (if so it must be called) seems to involve a rupture of continuity between datum and object known, inimical to knowledge. Mr. Lovejoy and I have been busy, each in his own way, trying to repair the breach and, so to speak, get knowledge across. In fact, we have rival theories. Neither of us likes the other's. One or both of us might be led to take a more favorable view if our theories could be confronted. I should welcome criticism of mine; and Mr. Lovejoy is the most clear-headed, penetrating, conscientious, and thorough of critics. I propose therefore to draw, if possible, his powerful and salutary shafts down upon myself by criticizing *him*. I shall state my objections to his theory, and then re-state my own, with certain clarifications which I think should make it more acceptable. It goes without saying that I should not challenge my redoubtable friend to this trial of strength unless I believed I could convince him.

By way of the usual preliminary hand-shake, I will enumerate the points which our theories have in common. We agree (1) that the datum is distinct in its being from the *cognoscendum;* (2) that it is inefficacious; (3) that it is not an "essence" in the sense of a universal; (4) that the givenness of the datum is not the whole of cognition, but there is more, a more in some sense conscious or mental, which requires to be explained—namely, reference to a real thing, and use of the datum to represent the real thing. I may perhaps be allowed to call reference to a real thing, *indication*, and use of the datum to represent it, *depiction*. Our theories, then, are attempts to explain by what means indication and depiction are effected.

Next I must mention certain respects, partly verbal but not wholly so, in which our conceptions of the cognitive situation differ. He speaks of the datum as an "existent." If to "exist" means only to be met with at some point of the universe and to be of determinate nature, I agree that in this sense the datum exists. But a ghost when a superstitious person sees one, or a geometrical illusion when you are under it, "exists" in this sense; and I do not like to speak of ghosts and illusory objects as existing. I prefer to restrict the term "exists" to things that would have existed even if you had not seen them. Now there is and can be no evidence



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that this is true of sense-data. A sense-datum exists (if you call it "exists") only when some one is perceiving an object. Further, I find that efficacy belongs only to things that would have existed even if they had not been seen; while things that exist only by being seen are inefficacious. It seems to me unfortunate, therefore, to class together things that are inefficacious and exist only by being given and things that are efficacious and (as Mr. Lovejoy will admit) incapable of being given, and call them both "existents," simply because both are met with—in two different senses of "met with," namely, *given* and *indicated*. The reason why this is done is doubtless because ordinary sense-data are so vivid and stable. It may seem a purely terminological question, but I think the usage here criticized has an influence on thought.

Besides being inefficacious, and intermittent, a sense-datum is dependent: for it occurs, as we saw, only when some one is perceiving an object. In one word, it is unsubstantial. Would it not be better to call such an entity an *apparent* (Locke's *phantasm*)? This term contains the proper suggestion that there has to be some one to whom it appears. I grant that a sense-datum is not a mere nature, but has being: but the sort of being it has is specious or apparent being, which it gets from the real being of the sensations in the mind of the person to whom it appears. A ghost, for instance, gets its apparent being from the visual sensations and fears in the spectator's mind; a geometrical illusion, or the two aspects of the staircase figure, get their apparent being from the percipient's visual sensations and felt motor tendencies.

The nature of a sense-datum is, however, not yet adequately conceived when it is thought of merely as an apparent, or as appearing to some one. For it is the appearing *of* something. In the way in which sense-data actually occur in perception, they are always given as representations of real things. *Depiction* is of their essence —if not in the sense that it is a part of what is sensible, at least in the sense that it is essential to the situation in which they occur. Moreover, as we shall see, *indication* always precedes and accompanies depiction. We must be on our guard, therefore, against turning into an original—an object on its own account—what in the setting in which it alone occurs is a substitute, representation, or picture.

How then are indication and depiction effected?

## I

### Mr. Lovejoy's Theory

This is set forth at length in *The Revolt against Dualism*, in the final chapter on "The Nature of Knowing"; but he has summarized

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it briefly and clearly in his article, "Good and Bad Dualisms," in this JOURNAL for June 23, 1932 (Vol. XXIX, p. 353) from which I take the following quotations:

> *How* does the occurrence in a given experience of one particular existent, viz., a datum, constitute a knowing of another particular and not-then-experienced existent—which at the moment of knowing may be in fact a non-existent, i.e., a past or future state of things? How, in Professor Dewey's apt phrase, are things "present as absent"?

I stop here for a moment to note his next remark that "there have been in recent philosophy, so far as [he] can recall, only two serious attempts to deal with [this problem]. One of them is the thesis of some critical realists, of some 'new' realists, and of Professor Whitehead in certain passages, that the datum is *not* a particular existent, but an essence or 'eternal object' . . ."; and the other attempt is his own. This does not, I think, quite do justice to the views of certain, at least, of the thinkers mentioned; for it refers only to their account of depiction, and makes no reference to the important rôle played in Whitehead's theory by afferent causation and in Santayana's theory by "intent," both of which are attempts to explain indication. Mr. Lovejoy's own theory is as follows:

> An image or other datum in my present cognitive experience can refer to an object, event, or fact not now being immediately experienced by me, simply because the observable nature of *cognitive* experience consists, not in the bare presence of a datum, but also in the presence to consciousness of a schema of relations of mutual existential externality—in the phraseology of the myth, "an image of the Whole"—within which schema the present and private cognitive experience itself, with the immediate data it includes, is apprehended as having a locus external to that of the *cognoscendum*, but at the same time as having some character (which *may* be a highly abstract one) identical with a character believed to belong to the not-experienced *cognoscendum* in its own conceived region of being. This is, I have suggested, what every one of us manifestly does whenever, for example, he experiences an image and calls it a memory image—i.e., an image of an event not occurring simultaneously with the presence of the image in experience.

It is not easy, even in view of so explicit a statement, to seize another philosopher's thought exactly and be sure that one does it justice; and if in the following remarks I should misinterpret Mr. Lovejoy's theory, I apologize in advance and beg to be corrected.

His theory is, that the past event is known by our conceiving its temporal locus, and believing that in that locus there is something which exists as the image exists and has characters like those which the image has. A schema of temporal relations enables us to conceive the locus of the past event, and to contrast this locus with the locus of the image as being mutually external. On this conceived relation of externality the burden falls of making us cognizant of what is "not-now-experienced."

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According to this theory, memory is not simply apprehension of one thing, the past event, but it requires the apprehension of three things: (1) of the image as being a present existent, (2) of a locus in the past which is merely conceived, (3) of the relation of externality between this locus and the locus of the image. This threefold apprehension is thought necessary to our viewing the event as in the past. Granting momentarily for argument's sake that it is necessary, Mr. Lovejoy's way of stating the fact strikes me as strange. Why does he say that "the present and private cognitive experience itself, with the immediate data it includes, is apprehended as having a locus external to that of the *cognoscendum,*" and not rather that the *cognoscendum* is apprehended as having a locus which is external to that of the image? Surely it is the time of the past event, not that of the present image, which is most prominently before us in memory. And does he really think that, in order to remember, we must *apprehend* the image as having a locus in the present? If it is consciously referred to the present, in what terms is the past event seized—is the latter merely conceived, not imagined?

This theory, as I seem forced to understand it, is the extreme of dualism. We look from the present towards the past, merely conceiving the latter; at the end of the vista appears a vague *x*, which we define as like the image in character and existence. The past event is not imagined, it is merely conceived.

In propounding this theory, Mr. Lovejoy considers himself to be stating "the observable nature of cognitive experience." I am sorry to say that my observation does not accord with his. When I remember quite simply and unreflectingly, the past event seems to stand before me *in propria persona,* and I am conscious of nothing else. If I had no other source of information about memory than the experience itself, I should think those philosophers right who say that we have a power of immediately beholding the past. It is only when I reflect on memory, recall what was immediately present, and say to myself that it differed in time and in character from the real event—it is only then that I become conscious that I remembered by means of an image.

The naïve rememberer is not aware that his image is a present existent. From the first moment of the image appearing, it is given to him as lying in the past. The image is not given to him as an entity distinct from the event remembered. It is given as being that event. In other words, he is not, at the moment of remembering, aware that his memory is representative; he is aware of this only in reflection.

In the last sentence of the long quotation above, there is a phrase which surprised me in so careful a writer as Mr. Lovejoy. A per-

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son who remembers does not, as he says, "experience an image and *call it* a memory image." He experiences an image and regards it naïvely as identical with a past event. The person who is aware of the image and the past event as distinct, who can think of the relation of externality between the two, and "call it a memory image," is the reflecting epistemologist, or the rememberer himself when he reflects. What Mr. Lovejoy is describing is memory as it appears to the eye of reflection—not memory as it is for the rememberer himself. He has attributed to the naïve rememberer a vision which is possible only in reflection. Is not this an example of what James calls "the psychologist's fallacy"?

If the naïve rememberer is not aware of his image as being a present existent, it can not be true, as Mr. Lovejoy says, that within the conceived schema "the present and private cognitive experience itself, with the immediate data it includes, is apprehended as having a locus external to that of the *cognoscendum.*" It has in fact such a locus, and the reflecting epistemologist apprehends it as having such a locus, but the naïve rememberer does not. One of the two terms, necessary to applying the conceived schema and apprehending the temporal relation between the image and the *cognoscendum,* escapes the naïve rememberer. He experiences the image, but he does not apprehend it as a present existent. And since it is the contents of the naïve rememberer's mind that we are trying to explain—the means by which *he* reaches the real past event—the suggestion that he does so by conceiving its temporal relation to his image will not do as a solution of the riddle.

According to Mr. Lovejoy, he apprehends not merely the temporal relation between *his image* and the real past event, but the temporal relation between "the present and private cognitive experience itself, with the immediate data it includes," and the real past event. In other words, he does not merely cognize the object, but cognizes also the relation between his cognitive experience as a whole and the object. I can not believe that Mr. Lovejoy really means what he says. Consider what a tangle cognition would be, if, in order to cognize anything, we had to cognize also the relation of our own cognitive experience to it! But his statement makes it doubly clear that what he is describing is memory as it appears to the reflecting epistemologist.

Mr. Lovejoy's theory fails, I think, the moment it is admitted that the image is not apprehended as a present existent, but only experienced or lived. The presented antithesis between the now and the then, by which he hopes to explain memorial knowing, is seen not to be a fact in naïve memory. It is a fact in reflection; and of course every educated man often reflects. But even so, what is this

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special power which Mr. Lovejoy finds in a conceived relation, of carrying us to the real, "not-then-experienced" relation? To reflect is to have as object the image, the past event, and their relation, as to remember simply is to have as object the past event. In reflection there is a complex datum, which is as distinct from the real relation known, as the simple datum, the image, is distinct from *its* object. He has only substituted a complex case of knowing for a simple case, a complex datum for a simple datum, without thereby explaining how either datum enables us to reach the real. As an explanation of this in the case of the simple datum, he offers the data of reflection. But these only state the fact of reaching, they do not explain how it is done.

Mr. Lovejoy may reply, that at least memory does involve dating an event in the past. I answer: referring it to the past, yes; but dating it, no. We date an event by means of *other* memories—which may be as vague as you please, a mere "yesterday" or "last year" —but the event must be referred to the past before it can be dated. Suppose I have recently had some exciting experience, such as the sight of a murder: the image of it rises before my mind with a certain insistence, and is felt to be that of a real past occurrence, without my thinking even in the vaguest way of *when* it occurred. I am too much disturbed by the event itself to have any wish to do that. To think of when, is to recall other events that occurred before or after; but each of these events is a memory referred on its own account to the past. If I follow the chain of these events along far enough, I may come down to the present; but it is not this *remembered* or *conceived* temporal enchainment that originally assigns each of these events to its place in the past. It is a tendency, left behind in my nervous and mental structure as a result of the actual past experience, which causes an image to rise and obliges me to assign the imagined event to its proper place. A mere abstract temporal schema would not help me to do this. A concrete schema—"an image of the Whole"—is a chain of memories, the relation of *each* of which to its real past event requires to be explained.

Undoubtedly, when we think that an event happened "last year" or "yesterday," this *implies* a relation to the present—a schema, if you like, of temporal relations. But whence did we get this schema? We were not born with it. It is a residue left behind by innumerable memories. Countless times we have passed from yesterday to to-day, and remembered yesterday—in more or less concrete terms. If this is the origin of the schema, it appears quite clearly that memory can not be explained by conceiving (even in the subconscious form called "apperceiving"), but conceiving has to be explained by memory. On the very first occasion on which we ever

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remembered an event—say, the next moment after it happened—the past event must have been made present to us in some other way than by our using a conceptual schema. Thus Mr. Lovejoy's theory is as if he said: "How do we remember? By using the residues of other memories."

One other defect—an unauthorized inclusion—in his statement of the theory remains to be pointed out. He speaks of "a schema of relations of mutual *existential* externality." How comes *existence* to be present in what is only a datum of conception, an "image of the Whole"? He speaks of "the *cognoscendum* in its own conceived region of being"—as if by conceiving this region we transcended and reached it. But (to repeat the point made before) by "conceiving" may be meant a further imagining—and then we have not got beyond the region of images; or else a cognizing of the existent—and then transcendence has been surreptitiously introduced, the question has been begged. By merely conceiving existence in the former way you do not reach existence, any more than by merely imagining a datum you reach a real object.

Even if conceiving had performed this vital office, leaping out from the image as a present existent, the "existent" to which it conducted us would not be an existent of the *thick* sort—a real past murder—but only an existent of the *thin* sort exemplified by ghosts, illusions, and data in general. By means of such a memory we could remember our own past apparents, but not that any real thing appeared or that it appeared to *us*.[1]

To sum up: (1) it is contrary to fact that we are aware of the image as a present existent; (2) it is contrary to fact that in unreflective memory we conceive the externality of this existent to the past event; (3) it is contrary to fact that the past event is an existent of the same kind as the image.

Mr. Lovejoy has evidently been led to his theory by reflection on the case of memory; and he doubtless took this course because memory appeared to him so clear and undeniable an example of a knowing of the absent. There are dangers, however, in taking up the forms of knowing in this order; for perception is earlier than memory, and is the simplest (though how far from simple!) form of cognition. I turn, therefore, to Mr. Lovejoy's parallel treatment of perception with the expectation that the defects of his theory will there be more visible.

[1] *Revolt*, pp. 312–313: "The notion of existence. . . . We are empirically acquainted with its meaning by ourselves being—and by the being, at any moment, of our present data." Actually to be is *not* to be "empirically acquainted" with our own existence; some form of cognition is necessary for the latter. And the being of data is *not* existence in the same sense as that in which we and external things exist.

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His theory of perceptive knowing will read: "A sense-datum is an existent whose place is *here*—that is, where my body is; it is referred to a place external to me by means of a conceived schema of spatial relations; in that external place there is believed to be something, which exists in the sense in which the sense-datum exists, and has some characters like those which the sense-datum has." Again I apologize if this brief statement in any way misrepresents his view.

The objections to this theory are the same as those to his theory of memorial knowing. (1) It is not a fact that, in experiencing a sense-datum, I feel it to be where my body is. On the contrary, from the first moment of experiencing, say, a visual sense-datum, I feel it as being at a certain distance from me. (2) It is not a fact that I feel its distance from me by apprehending the sense-datum as an existent, conceiving a certain external place, and thinking of something like the sense-datum as in that place. The sense-datum is *seen* as in that place—it is already referred to that place when it first appears. The spatial relation between that external place and the place of my body is indeed present to me, but present as a relation between the parts of the total sense-datum—a part on which my attention is especially fixed and a part lying more in the background. (3) The existence which I ascribe to the object seen is not of the same sort as the existence of the sense-datum, but is the sort of existence which I ascribe to myself.

This last criticism can be urged more effectively here than in the case of memory; for memory is, partly at least, the recalling of a previous datum. Perception, on the other hand, is clearly the seizure of a real thing. I have looked carefully to see how Mr. Lovejoy explains this seizure. He seems to think that the "existence" of the sense-datum, taken with the antithesis of spatial relations, the antithesis between the external place and the place of the sense-datum, sufficiently accounts for it. But this is an antithesis between two parts of the total sense-datum! It is an antithesis in "private" space, and therefore affords no means of emerging from the latter into "public" space. Unless transcendence be begged, we have not got, either in sensible experience or in conception, any antithesis between two real places.

Further, even granting that, starting from the sense-datum as an existent, we could transcend thus, the object to which we should be conducted would not be a real thing, but only another existent of the same sort as the sense-datum. This would hardly do for a dualist. Every dualist must admit, and Mr. Lovejoy does admit, that the existence we ascribe to the object is *not* of the same sort as the existence of the sense-datum. It is not of that thin sort which belongs to data, and is shared by them with ghosts and geometrical illusions,

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but is of the thick sort that characterizes mountains, fire, enemies, food and drink. It is not *apparent* being, which ceases the moment the datum vanishes, and is inefficacious while it lasts; it is *real* being, which would be just as truly if it did not appear, and is efficacious.

The vital thing, in a theory of the nature of knowing, is to explain how existence in the thick sense is made present to the mind. Mr. Lovejoy speaks of "belief," and I agree that belief must set its seal on the matter; but the belief must be belief in something presented. It must set its seal on an idea, or notion, or feeling, of existence: and in which of these ways is existence presented? I think Mr. Lovejoy has been led astray by concentrating his attention on the notion of "absence," which emphasizes non-existence *here,* but leaves rather vague what is meant by existence *there.* Both the here and the there, so far as given, are "private": how, without *petitio principii,* can he educe from them the notion of the "public," and explain the percipient's grasp of it?

His sole means of transcending is the conceptual schema. But concepts are derived from percepts, not percepts from concepts. A ship-captain may locate the position of his vessel in the ocean by using a chart; but if other ship-captains had not previously explored the ocean with their eyes and instruments, this one would not have the chart to use. Mr. Lovejoy has not realized what a gigantic *hysteron-proteron* it is to attempt to explain perception and memory by conceptual placing. The use of the term "perception" for conceptually interpreted, or apperceived, vision and touch grew up at a time when all the world were idealists, and bare vision and touch were supposed to yield only impressions or sensations, which had to be woven into a conceived scheme of things in order to furnish anything that could be called knowledge. I fear that Mr. Lovejoy, realist and dualist though he is, still unconsciously retains some assumptions which he imbibed from his idealistic preceptors.

I will ask him one final question. When a cat sees a mouse, does she do so by conceiving the externality of her sense-datum to it? It should not be beneath the dignity of epistemologists to consider vision and touch as they are in the lower animals.

In reading the contributions of my colleagues at home to the two volumes of *Contemporary American Philosophy,* I came upon account after account of the perception of external things, clear, well reasoned, and admirably expressed—none more so than that of Mr. Lovejoy; and felt proud to belong to so glorious a company. But I was struck by the fact that, in almost every case, their eyes were turned outward, towards the nature of the external world, and they gave relatively little attention to the equally important question of the nature of the self. Further, I thought I saw that they used too

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exclusively methods of logical analysis, and did not sufficiently bring to bear upon the problems of perception and of self-consciousness the facts that have been accumulated by biologists and physiological psychologists. Over-confidence in logic, insufficient reasoning from facts, have indeed always been characteristic of philosophers (myself included). We have much excuse for this, in the extreme complexity of our subject. And the recent advances in physics have not made our task more easy. Nevertheless, as the key to ontology will be furnished to our descendants by the completion and clarification of molecular theory, so it seems to me that the key to epistemology will be found to lie in the mode of action of the nervous system.

This conviction on my part will explain the title which I here give to my own theory of the nature of knowing. This theory was set forth in *Essays on the Natural Origin of the Mind,* and most clearly formulated in the Introduction and Essay III, "On the Relation of the Apparent to the Real," though the development of it runs through the entire book.

## II

### The Sensori-Motor Theory

The crux of the problem, as before remarked, is to explain how we seize the *existence* of the external thing. This is done by that one of the two functions, together making up the cognitive relation, which I have called "indication." When the *modus in quo* of indication has been explained, it will be clear how the datum, despite its representativeness, can be a "depiction" of the object.

As Mr. Lovejoy and I are both realists, I shall not scruple to assume at the start a real world in space, in which a thing exists outside an animal body. If I were arguing with an idealist I might proceed differently—start with only data and consciousness, and endeavor to work my way out. It would not then be possible to *prove* the existence of external things, nor is it now: we both agree that our conviction of their existence rests on what he calls "faith," and what I call "instinctive trust." But we both have this conviction, and nothing would ever induce us to abandon it; so why should we not start by assuming that a real external thing acts on the sense-organs and brain of an animal?

I hope it will not seem unworthy of a philosopher, or too suggestive of omniscience on my part, if I take, as an example of an animal, a cat. I take a cat, because we are less likely to attribute to her conceptual schemata and self-conscious knowing.[2]

[2] Mr. Lovejoy, at the end of his delightful myth, says that the Demiurgus conferred the power of knowing upon *man;* but this is surely unjust to the lower orders of creation, and he can not have meant it seriously.

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When a cat sees a mouse, there is presumably but one mouse within the range of her vision. This establishes already, in a vague way, a relation between her and it, making it clear *what* object is indicated. The motion of something running, affecting the margin of her retina, has caused her to turn her eyes in a certain direction: this physiological pointing makes the indication more unmistakable. She had to converge her optic axes and accommodate her eyes in order to see the mouse clearly: this sharpens the indication, and restricts it to an object at a certain distance.

But all this, Mr. Lovejoy will tell me, is only a physiological reaction on her part—it is not a felt or conscious indication. He disapproves of "practical" theories of the nature of knowing, because they do not make indication mental—a sound objection if the fact were so. My reply is, that the cat can not direct, converge, and accommodate her eyes without feeling this behavior of hers, in the form of kinesthetic sensations from the muscles used. She does not *attend* to these feelings—her attention, for obvious reasons, is concentrated wholly on the mouse: but she has these feelings in her. Only the mouse becomes present to her as a focal datum; the muscular feelings (in so far as they represent her own behavior) are in the background, and constitute that "consciousness," additional to the mere datum, which Mr. Lovejoy explains as a conceiving of spatial relations.

The muscular sensations do not, however, merely lie in the background. They play a double rôle, and constitute also, not a conceiving, but a feeling, of spatial position. They contribute the cat's sense of the mouse as present *at a certain distance.* Her visual sensations alone would not reveal the distance from which the stimulations have come. It is the visual and the kinesthetic sensations conjoined—existing in her mind at once but undiscriminated—that cause her to experience a datum showing not only the color and shape of the mouse, but also the distance it is away.

Psychologists speak of the two sorts of sensation as "fused," but this does not mean that they coalesce into a third sort of sensation: it means that they give rise to or generate an *apparent* (compare the case of the ghost), not real as the sensations are.

Now the cat can not have such an apparent before her, unless she has previously looked in the proper direction and converged and accommodated her eyes. She can not even get the particular sensations unless she has done so; much less experience the apparent. *An apparent generated under these conditions is not a mere apparent contemplated for its own sake; it is the appearance or depiction of a thing.* The cat contemplates her sense-datum for the sake of the mouse and her subsequent dinner. A sense-datum, if

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not in its own nature the depiction of a thing, is at least such a depiction in virtue of the circumstances in which alone it can arise.

What a pity epistemologists approaching perception can not see as cats do, and *use* their sense-data! Instead of continuing to use them—continuing to perceive, as it might be called, *sincerely*—they stop perceiving, turn their attention away from the real external thing, and fix it upon the sense-datum: and then can not find the link that connects the datum with the object. The datum turns into a "sensation" or "impression" given for its own sake, and they become idealists; or into a subjective object, the only thing "experienced," and they are at their wit's end to understand how it can reveal a second object distinct from it. This is the fallacy by which all philosophers meditating upon perception are waylaid—the fallacy of initiating the study of this function by no longer sincerely perceiving.

Mr. Lovejoy rejects "practical" theories of the nature of knowing either because he thinks that practice means volition, not cognition, and is subsequent to the latter, or, more probably, because he thinks of reaction as purely physiological, whereas our grasp of the real thing must be in some sense mental. I hope I have now made it clear that on the sensori-motor theory it *is* mental as well as physiological.[3]

How then, on this theory, is the existence of the object grasped? The real thing can not be absorbed into the mind—it must remain external, and in its own being inaccessible, to the end of the chapter. Its existence can only be indicated. But if the axes of the percipient's eyes converge so as to meet only at a certain external point; if the feelings of directing, converging, and accommodating the eyes are different in each case, so as to be indexes of the point fixated; and if the animal is all ready to behave—think of the cat and the mouse—as if there were a real thing at that point: then it grasps the real thing cognitively, in the only way in which a real external thing can be cognitively grasped. To demand more would be to exact from Nature a kind of knowing which evolution is powerless to furnish—an immediate intuition of the real, such as we at first naïvely imagine vision to be.[4]

[3] Cf. *Revolt*, p. 312: "The practical function of knowledge, upon which it is the current fashion to lay so great emphasis, is secondary to this function of intertemporal [and interspatial] transcendent reference, and derivative from it." I think I have shown that the true relation is just the other way about.

[4] I need not here discuss the application of the sensori-motor theory to memory, as I have dealt with it in *Essays on the Natural Origin of the Mind*, in the essay "On Images and Thinking." On the naïve percipient's identification of the sense-datum with the real thing, see my discussion in *Mind* for October, 1931, "Is Perception Direct, or Representative?" Some consequences

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The point in this theory which is most likely to provoke dissent is the distinction made between sense-data and sensations, their opposition as the apparent to the real, and the view that the former are generated out of the latter. I think I should be able to count, at least, on the support of dualists in maintaining these positions; for they follow almost at once, when dualism is applied to that other form of cognition, self-consciousness. So far from being a weakness in the theory, the view that sense-data are generated is its strength; for (1) it brings the datum into proper relation to the object, as *depicting* it, and (2) it gives us a datum derived from the real, and therefore capable of depicting it *truly*. These are precisely the requirements which theories of the nature of knowing have hitherto failed to satisfy.

Dualistic realism, when applied to perception of the nervous system, leaves the real nature of the latter problematic. But self-consciousness assures us that we are made of *feeling*—of something that can know and will—rather than of particles of dead matter. I have adopted the vague word "sentience" to express this life, capable of knowing and willing, which we find in ourselves. May we not satisfy the demands at once of physicists and of psychologists by considering that we are made of particles of sentience?

Psychologists, we are told on good authority,[5] are divided in opinion as to the subject-matter of their science, some thinking that it embraces "contents" and "acts," while others recognize only "sensations." This is evidently the same difference of opinion as that between philosophers who assert and philosophers who deny "consciousness" or "activity." In my judgment both views are partly right. The two parties can be brought together, and what is sound in the contention of each allowed, by a simple admission. This is the admission that an "act" is the use of sensations to generate sense-data by which objects are depicted. Psychologists are anxious to keep clear of philosophy and to concern themselves only with experienced facts; but they may find this bit of epistemology indispensable to clearness in their fundamental conceptions.

If external objects are known by means of data which are distinct from them, the same may be true of the knowing of states of the self. The self exists most truly when vivid, clear sensations are in it. These are in time—the real time that elapses in innumerable successive parts, no two of which are real at once. How is it possible that we should apprehend in all their complexity states of which this can be said? We apprehend them only in the form of

of the evolutionary origin of cognition, among others "bifurcation," are made clear in the discussion, "On the Subject-Object Relation," in *Mind* for October, 1932.

[5] C. S. Myers, *Text-Book of Experimental Psychology*, pp. 324–325.

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specious, simplified wholes—in the form of *data*, in which their minuter characters are lost to view. Moreover, motor feelings combine with sensory feelings to produce the datum in every such case.

Take pain, for instance. It appears at first sight as if all that is meant by pain were the immediate experience, the datum. Pain vies with visual apparents in vividness and definiteness, and there is the same temptation in both cases to suppose that the datum itself is the sole reality with which we have to do. But there is always some morbid process, usually in a peripheral part, of which this datum is a revelation. Further, there is the same compositeness of origin as in the case of visual data: the painfulness or "intolerableness" of pain is due to the muscular reactions and resulting muscular feelings by which we struggle to escape from it, and if we cease to struggle and look the pain in the eye, only an intense but no longer painful sensation remains. There is therefore ground for holding that the datum called pain is the result of a "fusion" of intense but not in themselves painful sensations with muscular feelings of revolt and recoil.

The morbid process of which pain is the depiction usually occurs in a peripheral part; as an example of a process occurring in the centres, we may take fatigue. This (when not merely muscular) is due to a state of exhaustion of the nervous system at large. But the active nervous system, on any dualistic theory, appears only from without as material; and we have the evidence of self-consciousness that, in its core, it consists of sensations. If this were not so, how could it generate apparents, having the luminous being which we find to belong to sense-data? In fatigue, these apparents are strangely weakened in their luminosity. But it is the weakened sensations, out of which the apparents are generated, that are the objects of which our feeling of being tired and confused and incapable makes us aware.

What has thus been suggested for pain and fatigue may be applied to every state of the self which it is possible for us to view by introspection—to emotion, desire, volition, and finally to sensations visual, tactile, and other. We may cognize them all, but we always do so in the form of a datum which is distinct from the object depicted, and very much simpler.

Thus the conclusion to which one is driven, when one applies dualism consistently all round the circle, is that all knowable things without exception are known only in the form of data, which are distinct in their being from the real things known. What is often called "experience," and imagined to be the substance of things, is a subjective creation—a "veil of Maya" interposed between us and the really existent.

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Most people shrink from this view, because it seems to cut us off from the real and make knowledge of it forever impossible; but this is an illusion. It is an illusion due to hypostatizing the datum and turning *it* into the object known. But this is a fallacy. Data are depictions of real things. If, continuing the instinctive trust which is natural to us, we accept the *existence* of the real world on the evidence of indication, we are bound in consistency to accept with equal confidence, on the evidence of depiction, the characters which data assign to this world. Data do not cut us off: they link us on.

They link us on as respects space. Visual data could not have the spatial characters, the mutual externality of parts, which they actually have, if the parts of the retinal and cerebral processes—which consist, we saw, of sensations—were not mutually external in space; and if sensations, which are a part of the real, are in space, then the rest of the real must be in space also. Real space, moreover, must be essentially like the space of visual data, and only modified slightly by the omission or covering up of its minuter parts. Thus the theory that data are generated out of sensations enables us to give a reason for our confidence that the real is known truly.

Data link us on as respects time. If sensations were not really in time—each state of the self giving birth to a new state as it deceases—they could not yield data exhibiting a continually changing "specious present." The speciousness of this present is due partly to the fact that it preserves for a fleeting moment what in truth has irretrievably gone; and partly to the fact that it does not show the inconceivably numerous presents which have really succeeded each other, but only their sum. But we get a sufficiently accurate vision of the real to be able to live.

The duality of data and objects, of the real and the apparent, indeed remains and is final. Nothing can ever bridge the *logical* distinctness of what exists and what does not exist. But, if I may express a personal preference, I dislike calling this "dualism" (I have done so up to this point for the sake of argument), because, as I have tried to show, the *natural origin* of apparents can be completely accounted for as an inevitable result of the dealings of sentient organisms with their environment. Cognition was a biological necessity and a not impossible though somewhat difficult achievement. Why should we nullify it by idealism? There was never an idea which was not the depiction of something—object, relation, or entity—in some animal's mind. Why should we distort cognition by turning the datum into an object, and so losing our confident hold on the real? Why, finally, should we dishonor cognition by saying that we only know things as we are obliged to know them, and can not know them as they are?

C. A. STRONG.

VILLA LE BALZE, FIESOLE.

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## TANGLING COGNITION

"CONSIDER what a tangle cognition would be, if, in order to cognize anything, we had to cognize also the relation of our own cognitive experience to it!" This sentence, quoted from Mr. C. A. Strong's article on "The Missing Link in Epistemology,"[1] is devastating. It reduces to unintelligibility much that is written about knowing and knowledge, for it makes clear at a glance that the relation—if we will speak of a "relation" in this context—between cognitive experience and what is thereby cognized, is simply cognition itself. The sentence suggests others correspondingly framed. Consider what a tangle seeing would be, if, in order to see anything, we had also to see the relation of our visual experience to the thing seen! Consider what a tangle motion would be, if, in order for a body to move over a given track, it had also to move over the relation of its motion to the track! Or consider Achilles and the tortoise! Reflection on such and similar variations of the sentence tends to make one suspicious of the problem of the relation of cognitive experience to what is thereby cognized.

But, it may be urged, the relation of experience to what is experienced is precisely what the problem of knowledge is, even if we do not experience that relation, for our experience reveals itself as the means of knowing something else, and, therefore, sets the problem of its relation to that something else. For example—to use one of many examples—our visual experience of a railroad track is that its rails converge, but we know that they do not converge. Were it not for such examples as this, knowledge would not be a problem at all. But the multitude of examples of this kind which the advance of knowledge has disclosed and which seem to be the more imposing the more they involve expert knowledge for their statement, force the problem upon us. To revolt against it is not to solve it. It is only to ignore it. The problem stays even with those who refuse to recognize it. Seeing is a means of knowing, but that which is known is not that which is seen. Some sort of epistemological or ontological dualism is affirmed to be unavoidable, so long as seeing and knowing, experience and what is experienced, are contrasted as they so evidently are.

Those who are concerned about the problem of knowledge so stated, object to being told that cognition is experience as much as seeing and the rest, and that consequently the problem of knowledge ought not to be stated in the way they state it. And they do not like to be told that the inevitable dualism on which they insist, is only a restatement of their problem and not a solution of it. Mr. Strong's sentence impresses me as a fortunate way of telling them

[1] Page 677, above.

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both these things at once. Since the dualism is only a restatement of the problem, the consequence is that cognition becomes only a tangle which could be untangled only by cognizing something which is never cognized. Mr. Strong's phrasing is fortunate because it avoids the pitfalls of such expressions as "thoughts and things" or "ideas and objects" and emphasizes the fact that cognition is an act and not a discovered or supposed relation within or without the field in which it occurs, nor a relation between two fields. Consequently whatever dualism is implied by or involved in the occurrence of cognition, is neither epistemological nor ontological, but something which characterizes the behavior of the field in which cognition occurs. For my part, I have failed to find any fact or argument which, when analyzed, warrants the contention that the behavior of this field is altered by the natural or artificial means of discovering what that behavior is. The behavior may be dualistic. The rails which do not converge are the rails which are seen to converge. That is the way they behave and because they behave that way we invent microscopes and telescopes which would be useless if the rails did not so behave. The convergence of parallels is a principle by means of which the world is explored. I can not transform this principle into an argument which puts parallels in the system of the world and convergence in our experience. My seeing the rails is not what makes them converge. If it were, then they ought not to converge when photographed. Whatever dualism is here involved is an operation of nature and an operation by means of which the dualism in it is discovered. To put the parallels in one realm of being and the convergence in another is to define a situation in which a photograph could never be taken. Shall we ask the camera to photograph not only its object, but also the relation between that object and its photographing? If not, why ask something similar of a thinking man? It seems to me to be inevitable that a being blest with the ability to see a world in which cameras, microscopes, and telescopes behave as they do, would see the principle of the convergence of parallels illustrated wherever he looked. His seeing would not be an impairment of his knowing, but an increase of its power.

I have already said that dualists object to being told that cognition is itself experience. In general I think they are justified, because the appeal to cognitive experience so often leads to the doctrine that the system of the world is a construct of that experience. It is not difficult for dualists by analyzing this doctrine, to confront it with the fact that it derives its force and intelligibility from the dualistic position itself. The construct to be available either theoretically or practically can not be wayward or willful, and this makes an appeal to its availability inept as a guarantee of its sound-

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ness. But emphasizing cognition as experience may have the effect of pointing out that the dualist's procedure involves some command of the terms of his dualism. The system of the world and our experience are at least subjects of discourse. This fact brings us again to Mr. Strong's sentence. Thinking about the system and the experience goes on. The attempt to deduce the thinking from either the system or the experience is futile, unless it is first read into the one or the other. It is obviously not a discovered relation between the two. The results of our thinking can not be an explanation of it. Or, if we take them as such, we ought not to deceive ourselves about what we have done. We have then defined explanation as an analysis of what we know and left the knowing precisely what it was before the analysis was made, precisely what it is, for example, to a physicist who never troubles himself about the problem of knowledge. He explains the operations of his subject-matter and not his cognitive relation to it. Current literature shows how much unintelligible nonsense can be written when the latter is attempted. The attempt to examine our cognitive relation to our subject-matter has not increased our knowledge. It is only analysis of our subject-matter that does that. Cognition is experience in such a sense, but this sense does not imply or involve a dualism of any other sort than is implied or involved by the fact that verbs as well as nouns are necessary for intelligible discourse—there is no knowledge without knowing.

Increase of knowledge, as Bacon said, is increase of power—increase of the possibilities of acting. I ask, therefore, if it is not wiser to take this dynamic fact as having a significance for the system of the world, than, by neglecting it, to turn cognition into a tangle?

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## BOOK REVIEWS

*Character-Portraiture in Epicharmus, Sophron, and Plato.* JOHN M. S. MCDONALD. Sewanee, Tennessee: University of the South Press. 1931. Pp. vi + 403.

This bulky volume gives an exhaustive treatment of its subject, and should constitute a useful book of reference for English students of early Sicilian drama and of Plato who have a slight acquaintance with the Greek language. It is not meant as disparagement of the labor and industry which have gone to its production to call it a compilation rather than a book. It lacks a preface or statement of its aims and sets out to prove no thesis. It follows Baconian lines

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of enumeration, comparison, and classification; and the unity conferred by its title is slight and hardly felt in large sections of the work. The four parts into which it is divided are fairly self-contained, chapters V–XV, for instance, containing practically no references to Epicharmus or Sophron. In fact, the book provides the materials out of which more than one book could have been written and it is regrettable that the requirements of a doctorate thesis presumably necessitated publication in its present form.

Parts I to III, occupying only a little over a third of the whole, deal respectively with Epicharmus, Sophron, and the extent of Plato's acquaintance with them. Part IV treats of Plato's dialogues and is by far the longest and most readable portion, though possibly the least valuable. The plan followed by Parts I and II is similar. In each a short chapter, giving an account of the life and writings of the author, is followed in succeeding chapters by an English translation of the extant fragments, arranged and classified under the titles of the plays or mimes to which modern scholarship has conjecturally and often very tentatively assigned them. The text followed is for the most part that of Georg Kaibel, *Comicorum Graecorum Fragmenta* (pp. 81–181) in the series of *Poetarum Graecorum Fragmenta* edited by von Wilamowitz-Moellendorff (but one should not have to go to pages 390 and 393 of the Bibliographies at the end of the volume to find this out!); except for the proverbs attributed to Epicharmus where Crönert's arrangement is followed. In the case of Epicharmus, the plays are classed as "scenes from everyday life," "myth-travesties" (arranged under the various myth-cycles), and plays and fragments of a semi-philosophical character. For Sophron the main classification is into women- and men-mimes: a preliminary chapter devoted to a discussion of the evidence that Sophron wrote travesties of myths arrives at a negative conclusion. Professor McDonald employs throughout, and in the tabular summaries which conclude each part, somewhat clumsy and pretentious rubrics, such as "situation-types," "characterization by mythic analogues," "characterization by infra-human analogues," etc. Surely this rather uncouth jargon could have been replaced by simple English words like scene, simile, or metaphor, etc.? The translation of the short fragments is accurate and scholarly, though a little inclined to give alternative constructions without indicating which is to be preferred or stating the grounds of preference. Exception could be taken to the translation of λόγος by "concept" on pages 50 and 318 and by "reason" on pages 56 and 73. In the phrase αὐξανόμενος λόγος the obvious translation seems to be "argument." Detailed criticism of these parts is out of place in a philosophical journal, but one can not but deplore the absence of the Greek

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text. No doubt Professor McDonald has the example of Burnet's *Early Greek Philosophy* to point to, but there Diels' text is easily accessible and Burnet's purpose is primarily one of philosophical interpretation. With a properly constituted Greek text these parts could have formed the basis for critical English editions of these dramatists. As it is, they are rather useless to the Greek scholar who has not Kaibel before him. Another blemish is the inordinate amount of duplication and overlapping which proves a source of irritation, though some of it is perhaps inevitable in any arrangement. Fragments are discussed in several places where one would have been sufficient, and appendices are added, apparently as after-thoughts: condensation here could have been effected with no loss and much gain. For example, the repetition in full on page 92 of the scholium on Theocritus II quoted on pages 83–84 (it narrates the Ἄγγελος myth) was manifestly unnecessary, and it is confusing to find fr. 147 in two places (§§ 49, 64) and fr. 169 in three (§§ 8, 56, 69). No doubt, allocation of fragments is often highly conjectural; but too much cross-reference shakes one's faith in the merits of the particular classification that demands it.

The two chapters of Part III discuss in the case of each author the external evidence for his influence on Plato's art, and the internal evidence in the dialogues of allusion or borrowing. In double column is given a careful tabulation of all passages which could possibly contain a reminiscence, side by side with the relevant fragments. On the whole the results are remarkably meagre. In the case of Epicharmus, where external testimony is practically absent, there is conclusive internal evidence in only two passages of Plato's direct acquaintance with him; in that of Sophron, the external evidence which exists is of doubtful value and the internal almost entirely absent. We are left, accordingly, with cumulative arguments and general probabilities, and the strong likelihood that in some cases the apparent echoes may be accounted for by a common gnomic source, if it be not a case of mere coincidence.

Part IV comprises almost two thirds of the whole, yet its contents can be briefly summarized. Chapter I discusses the character of the dialogues as philosophical mimes. But there is not much generalization and the author's method is to enumerate the various dramatic scenes of the Dialogues. Chapters II to IV are elaborate card-indices to Plato's use of myth, metaphor, and plays on proper names. An appendix to Chapter III gives for completeness a list of cases where the metaphor or simile refers to types or classes of human beings. Chapters V to XIV (pp. 189–361) are a complete *lexicon Platonicum* of the *dramatis personæ* in the dialogues, grouped as far as possible under broad general designations, such as

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old or young men, philosophers, professional educators and their pupils, conservatives, repressionists, etc. In each case the portrait is given by a condensed account of the part played and the views expressed by the character in the various places when he appears. In keeping with this objectivist treatment there is very little psychological analysis. Socrates is necessarily rather summarily dealt with and all controversy over the Burnet-Taylor view is studiously avoided. We have, in fact, a complete abstract of the contents of the dialogues (exclusive of technical philosophical arguments) in an arrangement which involves a good deal of repetition; but it is quite a readable account and must have involved a considerable amount of labor to compile.

The main observation one is inclined to make, however, after reading such an account, is an expression of doubt as to its usefulness. To put the objection in the form of a dilemma: to those acquainted with Plato's works it is useless, and to those who are not, it is meaningless. The secret of his dramatic art can only be learned by reading and rereading the Dialogues themselves and will not emerge from any system of classification, however elaborate and exhaustive. With these remarks Professor McDonald himself may agree; and perhaps he will follow up this volume with another attempting a much-needed study and appreciation of Plato's superb dramatic portraiture on the basis of the materials here assembled with such meticulous care.

The end of Chapter XIV gives a list of Plato's own descriptions of various types of character and Chapter XV contains a summary of the psychological analyses of Books IV, VIII, and IX of the *Republic*. Chapter XVI returns to the main theme, making a final comparison of the results of this study of Plato with those of the first two parts. The conclusion is weak; and one can not help feeling that it was bound to be so. For between the dramas and mimes of the Sicilians, which portray and burlesque the everyday life of the common people, and the Attic prose dialogues of a leisured class, where dramatic effect is strictly subordinated to philosophical purpose, and women have little or no place, the differences must be greater than the resemblances. In general it can be said that Plato had all the makings of a great dramatic artist, but deliberately employed his talents in the service of philosophy. He had a deep insight into the characters and motives of men; and, if there is some resemblance between his characters and the realistic portraits and scenes of Epicharmus and Sophron, it is because both draw directly from human nature itself. It is significant that the earlier dialogues, which make the largest use of dramatic effects, were probably all written before the two principal visits to Sicily.

The book is bound in stiff paper covers and handsomely and

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clearly printed on thick paper. It is remarkably free, for a book of its size and character, from misprints and inaccuracies. I have noted the following typographical errors and errata: p. 62, n. 12 (linear misplacement?), p. 97 (l. 8); p. 193 (n. 9); p. 236 (l. 1); p. 318 (l. 23) and p. 367 (n. 5 l. 3—should be ed. 3). There are exhaustive bibliographies to each part at the end, showing a wide acquaintance with the existing literature, chiefly German.

ALEX. J. D. PORTEOUS.

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*Da Guglielmo d'Auvergne a San Tomaso d'Aquino. Guglielmo d'Auvergne e l'ascesa verso Dio.* Vol. I. AMATO MASNOVO. Milano: Società Editrice "Vita e Pensiero." 1930. Pp. viii + 283.

The present book constitutes the sixteenth volume of the philosophical series of the publications of the Catholic University of Milan, Italy. The author, professor of the history of medieval philosophy at that university, has undertaken to examine the development and point out the contrasts of medieval thought in the West from William of Auvergne to Thomas Aquinas. This is but the first volume of a larger work which he has promised to publish.

In the first two chapters of his work Professor Masnovo graphically depicts the conflicts raging at the University of Paris from 1229 to 1231, the very storm center of which was William of Auvergne, then Bishop of Paris. He draws attention to the struggle for the recognition of Aristotle, whose writings had been proscribed in 1229.

Against Baumgartner, Schindele, Grünwald, and Baeumker the author maintains and seems to have established that William of Auvergne can no longer be regarded as a supporter of Anselm's ontological argument for the existence of God, especially, since he took no pains to hide his sympathies for Gaunilo. However, Professor Masnovo agrees with Baumgartner and Karl Werner against Hauréau that the fiery Bishop of Paris is not to be put in the class of extreme realists with William of Champeaux. His position on the problem of universals rather approached that of Abélard without being identical with it. The author establishes by careful references to the text of William of Auvergne that, at least after the fall, all knowledge comes through the senses and the elaboration of the data of the senses by the intellect, including the knowledge of God which it is possible for men to attain. Thus he clears William of Auvergne of ontologism.

Professor Masnovo shows that William of Auvergne was very well acquainted with the productions of the most active centers of contemporary thought, Chartres and Toledo. As he avoided the

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exaggerated realism of the School of Chartres and its pantheistic proclivities, so he also steered clear of such colorless ecclecticism as that which characterized the writings of William of Auxerre. As an illustration of the independence of thought of William of Auvergne Professor Masnovo alleges that no one used the works of Avicenna more than William. At the same time, however, no one combatted the great Arabian philosopher more assiduously. The author points out, contrary to the opinion of Pierre Duhem, that William of Auvergne did not adopt Avicenna's doctrine of the real distinction between essence and existence in creatures. He also demonstrates that Duhem was mistaken when he supposed that William's *Prima Philosophia* had been lost. In reality the supposed lost work is William's *De Trinitate* which is extant.

Professor Masnovo finds a certain similarity between some of the tenets of William of Auvergne and those of Hume and Kant. He holds that William of Auvergne aroused reactions and preoccupations in Thomas Aquinas akin to those which Hume aroused in Kant when he awakened him from his dogmatic slumber. It appears a bit strange that Professor Masnovo should suspect Hume of utilizing the writings of William of Auvergne during the three years he spent at La Flêche while composing his *Inquiry Concerning Human Understanding*. The fact that William is not even mentioned by Hume he ascribes to Hume's literary vanity. This is not impossible; however, the author has submitted no other evidence than the similarity between William's "habitus" and "mos" and Hume's "habit" and "custom." Certainly this is not conclusive. It undoubtedly would arouse considerable interest if it should definitely be established that Hume had profited by the works of William of Auvergne.

One must acknowledge that Professor Masnovo has unquestionably thrown new light on the life and teaching of William of Auvergne. He has produced a historical monograph which owing to his meticulous care and sound scholarship merits him not the least place among those who are engaged in the study of the history of the Middle Ages.

J. J. Rolbiecki.

Catholic University of America.

*Geschichte der Logik.* Heinrich Scholz. (Geschichte der Philosophie in Längsschnitten, 4.) Berlin: Junker und Dünnhaupt Verlag. 1931. Pp. x + 78.

There are so few good histories of logic that a new one is always welcome, and the same year that saw the publication of Jorgensen's monumental *Treatise of Formal Logic* can still find room for a pamph-

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let like this, however small it may be by comparison. Jorgensen's work was not available when this outline history was issued, so that Scholz cared to name as outstanding only two contributions to the history of logic: the work of Prantl, which covered the period from Aristotle to the end of the fifteenth century, and Couturat's study of Leibniz (p. v). Prantl he criticized for modern needs because his work was written before the recent development of symbolic logic which alone has made a clear understanding of formal logic possible (pp. v–vi). In a well annotated, seven-page bibliography at the end, the other material available for a historical study of logic is given.

Scholz begins not with the history of logic from Aristotle, but with an analysis of the forms of logic. Since there are types of logic, he thinks it is necessary to understand their nature before any history is attempted. In this analysis he devotes special attention to the Aristotelian formal logic and to the Kantian transcendental non-formal logic.

The rest of the pamphlet is concerned entirely with formal logic. The history of the classical form of formal logic is studied first, beginning with Aristotle and coming up to Husserl's *Formale und transzendentale Logik,* 1929. He includes under this heading all formal logic that is not inspired by the Leibnizian idea of logistics. Then follows, in the third and last section of the pamphlet the history of the modern form of formal logic, of symbolic logic, in other words. This begins with Leibniz and includes everything that is consciously or unconsciously inspired by his idea of logistics.

It is a most useful little summary of the history of logic from the point of view of symbolic logic.

ANDREW D. OSBORN.

NEW YORK CITY.

*Idées: Platon, Descartes, Hegel.* ALAIN. Paris: Paul Hartmann. 1932. 304 pp.

France is fortunate in possessing both a number of literary men who write on philosophical subjects with competence, and several teachers of philosophy whose use of the pen commands the respect of literary circles. One of the latter is M. Emile Chartier, professor of philosophy at the Henri IV lycée in Paris, whose career began in a similar institution in the provinces at Rouen. From 1906 to 1914 he contributed each day a little article of some fifty lines entitled *Propos d'un Normand* and signed "Alain" to a Radical newspaper, the *Dépêche de Rouen.* Ten volumes of these *Propos* have since appeared in book form, together with as many more containing longer compositions.

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Lest any American reader should visualize a French Dr. Frank Crane or Arthur Brisbane, let it be stated at once that all Alain's writings are subtle and sophisticated, even somewhat precious at times, and certainly miles over the heads of most of his old Rouen audience. He is fond of compressing his ideas in ingenious epigrams, which may or may not be the result of his journalistic experience. In this present volume he presents what have evidently been courses of lectures, since worked over and refined, on three great figures in the history of philosophy. He does not pretend to speak in the character of historian, but rather "to bring to light a good number of profound and subterranean ideas." He is something of a pragmatist, having little use for abstract intellectualism, and yet his comments are fresh and concrete without being superficial. He is at his best in his chapters on Descartes, whom he unreservedly admires. This book may well serve as a brilliant example of the way in which essays about philosophy, as in the case of George Santayana and a few others, may become living literature.

HAROLD A. LARRABEE.

UNION COLLEGE.

*An Historical and Critical Examination of English Space and Time Theories from More to Berkeley.* JOHN TULL BAKER. 1930. Pp. 90. (Columbia University Ph.D. Dissertation.)

The author presents a critical analysis of the space-time theories of six classic English thinkers during the seventeenth and eighteenth centuries. The concern of Henry More with the existential reality of space while he ignored the problem of time, the confusions imported by the Cambridge Platonists, and the growing clarity of the problems under the hand of Locke, are dealt with at some length. The chapter on Berkeley is perhaps the most thorough in the book, and that on Newton the least satisfactory owing to an underemphasis on the strictly physical aspects of Newton's work.

RUDOLPH KAGEY.

WASHINGTON SQUARE COLLEGE,
NEW YORK UNIVERSITY.

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## JOURNALS AND NEW BOOKS

BULLETIN DE LA SOCIÉTÉ FRANÇAISE DE PHILOSOPHIE. 31e Année, No. 5. Les Humanités et la Civilisation moderne. Séance du 38 Décembre, 1931. Thèse: *Jean Perrin.* Discussion: *G. Beaulavon, C. Bouglé, L. Brunschvicg, J. Hadamard, A. Lalande, X. Léon, Ed. Le Roy, Ch. Maurain, F. Roussel, Paul Valéry, E. Weill.* Appendice: Déposition de M. le Doyen Delacroix devant la Commission de l'Enseignement de la Chambre.

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REVUE DE PHILOSOPHIE. Nouvelle Série—Tome III, No. 5. Hans Driesch et le problème de l'individualité organique: *Pierre Gardère.* Reflexions sur la connaissance pratique: *Yves Simon.* Le problème du principe philosophique inconditionnel: *Oscar Philippe.*

SCIENTIA. Vol. LII, N. CCXLVII–11. La propagazione della scienza attraverso i secoli: *E. Bortolotti.* Ueber Paraphoren. Ein Beitrag zum Bewegungsbild der Erdrinde: *S. Bubnoff.* La chronaxie et sa signification physiologique. IIe Partie: *L. Lapicque.* The Transition from the mediaeval to modern outlook in pure and applied science: Georgius Agricola and the rise of metallurgical science: *I. B. Hart.*

GIORNALE CRITICO DELLA FILOSOFIA ITALIANA. Anno XIII, Fasc. V. Il carattere della filosofia tomistica: *Giuseppe Saitta.* Le correnti neovitalistiche e l'idealismo: *Leonardo Grassi.* L'etica di Giuseppe Butler: *Eugenio Garin.*

Bentley, Arthur F.: Linguistic Analysis of Mathematics. Bloomington, Indiana: Principia Press. 1932. xii + 315 pp.

Ford, Adelbert: The Story of Scientific Psychology. New York: Sears Publishing Co. 1932. xii + 307 pp. $3.00.

Geyser, Joseph: Das Gesetz der Ursache Untersuchungen zur Begründung des Allgemeinen Kausalgesetzes. München: Ernst Reinhardt. 1933. 164 pp. 6.50 M.

Greig, J. Y. T. (John Caruthers) David Hume. New York: Oxford University Press. 1932. 436 pp. $3.75.

Lewis, Clarence Irving and Cooper Harold Langford: Symbolic Logic. (Century Philosophy Series.) New York: The Century Co. 1932. xi + 506 pp. $5.00.

Mannheim, Karl: Die Gegenwartsaufgaben der Soziologie. Ihre Lehrestalt. Tübingen: J. C. B. Mohr (Paul Siebeck). 1932. iii + 65 s. 2.40 M.

Ogden, C. K.: Bentham's Theory of Fictions. (International Library of Psychology, Philosophy, and Scientific Method.) New York: Harcourt Brace & Co. London: Kegan Paul, Trench, Trubner & Co. Ltd. 1932. clii + 161 pp. $3.50.

Paulhan, Fr.: L'Esthétique du Paysage. Deuxième Édition. Paris: Félix Alcan. 1931. 250 pp. 18 fr.

Stcherbatsky, Th.: Buddhist Logic. (Containing a translation of the Short Treatise of Logic by Dharmakirti, and of its Commentary by Dharmottara, with notes, appendices, and indices.) (Bibliotheca Buddhica XXVI) 2 vols. Leningrad. 1930, 1932. xii + 560 pp.; vi + 468 pp.

Hönigswald, Richard: Erkenntnistheoretisches zur Schöpfungsgeschichte der Genesis. (Sammlung gemeinverständlicher Vorträge und Schriften aus dem Gebiet der Theologie und Religionsgeschichte 161.) Tübingen: J. C. B. Mohr (Paul Siebeck). 1932. 36 s. 1.50 M.

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Lévy, Louis-Germain: Maïmonide. (Les Grands Philosophes.) Paris: Félix Alcan. 1932. Nouvelle édition. ii + 286 pp. 45 fr.

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## NOTES AND NEWS

The Program of the Thirty-second Annual Meeting of the Eastern Division of the American Philosophical Association which will be held December 28, 29, and 30 at Bryn Mawr College, Bryn Mawr, Pennsylvania, is as follows:

### Wednesday, December 28

8:00 P.M. Informal Smoker

### Thursday, December 29

9:30 A.M.

Welcome by President Marion E. Park
Celebration of the Tercentenary of Locke and Spinoza
John Locke.....*Frederick J. E. Woodbridge*
Spinoza's Doctrine of Intellectual Intuition
*Benjamin Ginzburg*
Non-being.....*Raphael Demos*

2:30 P.M.

Are There Particulars?.....*Brand Blanshard*
What Are Propositions?.....*Morris R. Cohen*
The Problem of General Propositions.....*Andrew P. Ushenko*
Are Particulars Constituents of Propositions?.....*Lucius Garvin*
(Introduced by C. J. Ducasse)

4:30 P.M. Tea (as guests of President Park)
5:30 P.M. Meeting of Executive Committee
7:30 P.M. Annual Association Dinner
Presidential Address: Freedom, Necessity, and Mind
*Edward Gleason Spaulding*

### Friday, December 30

*Concurrent Discussions*

9:30 A.M. Division I

The Operational Test of Meaninglessness.....*Ray H. Dotterer*
What Is Analysis?.....*Albert E. Blumberg*
The Individual.....*Paul Weiss*
Logical Positivism and Psychology.....*John A. Irving*

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9:30 A.M. DIVISION II

Relational Absolutes.....*Helen H. Parkhurst*
The Relation of the Moral to the Aesthetic Standard in Plato
*Katherine Gilbert*
The Right and the Good, Methodology in Ethics....*Sarah H. Brown*
Reality and "the Real" in Bradley.....*Rudolf Kagey*

2 P.M. Annual Business Meeting

*Concurrent Discussions*

2:30 P.M. DIVISION I

Aristotle's Analytic Method.....*Abraham Edel*
(Introduced by F. J. E. Woodbridge)
The Theory of Logical Continuity.....*Lewis S. Feuer*
(Introduced by Morris R. Cohen)
The Identity of Formal and Material Truth in Rational Thinking
*Kurt E. Rosinger*
On Truth.....*John Somerville*
(Introduced by H. W. Schneider)

2:30 P.M. DIVISION II

Open Discussion on Ethics and Social Philosophy
(Each speaker limited to five minutes)

Information may be obtained from the Secretary *ad interim*, Professor Harold A. Larrabee, 1645 Wendell Avenue, Schenectady, New York.

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The Kant-Gesellschaft has appointed Professor Edgar S. Brightman of Boston University as Chairman of the National Group of the Kant-Gesellschaft in the United States. Any individual, or any library or other institution, may secure a membership in the Society by sending a check for $3.50 to Professor Brightman at Box 35, Newton Center, Massachusetts. Membership in the Society entitles one to a year's subscription to the *Kant-Studien*, a leading German philosophical journal, and to other occasional publications of the Society. There is special value in membership for professors or students who are intending to spend some time in German university centers.

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**Volume XXIX. No. 19. September 15, 1932.**

The Nature of Communication. DAVID RYNIN.
A Note on Compound Propositions. DAVID E. SWENSON.
Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 20. September 29, 1932.**

Relevance and Scientific Method. EVERETT W. HALL.
A Fundamental Difference between the Natural and Social Sciences. W. EDWIN VAN DE WALLE.
The Principles of Symbolic Logic. F. C. S. SCHILLER.
Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 21. October 13, 1932.**

Reason as Fact and as Fetich (I). HORACE M. KALLEN.
Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 22. October 27, 1932.**

Reason as Fact and as Fetich (II). HORACE M. KALLEN.
A Notation on the Problem of the Past—With Especial Reference to George Herbert Mead. ALFRED TONNESS.
Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 23. November 10, 1932.**

On Having Ideas in the Head. DONALD C. WILLIAMS.
Measurement Relationship and Correlation. PAUL HORST.
Book Reviews. Journals and New Books. Notes and News.

**Volume XXIX. No. 24. November 24, 1932.**

The Above-and-Below Notion. GEORGE R. MONTGOMERY.
Professor Driesch on Philosophical Methods of Procedure. MARVIN FARBER.
Book Reviews. Journals and New Books. Notes and News.

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# SYMBOLIC LOGIC

*By*

CLARENCE IRVING LEWIS

PROFESSOR OF PHILOSOPHY,
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COOPER HAROLD LANGFORD

ASSOCIATE PROFESSOR OF PHILOSOPHY,
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# THE JOURNAL OF PHILOSOPHY

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Vol. XXIX, No. 26. December 22, 1932

# The Journal of Philosophy

## THE EARLY DRAFT OF LOCKE'S ESSAY[1]

A STRIKING contrast may be drawn between Locke's original intent in discussing human knowledge and the finished *Essay* that finally came from his pen in 1690. On the one hand Locke set out to state in brief compass the few clear principles which he thought went to make up a sound methodology for intellectual enterprises. He was obviously impressed and deeply influenced by the work of the men who constituted the Royal Society or were carrying on scientific investigations into many matters of what was in the seventeenth century called "natural philosophy." He wished to extend the same procedure to the more troubled fields of "morality and revealed religion," of politics and economics and social life. He wanted to restrain men from wasting their time in speculations about what they could never really know and to direct them to wise investigations of practical affairs. He was certainly no ordinary rationalist; for he firmly maintained that all ideas are derived from experience. But he also, contrary to common classification, was no wholehearted empiricist; for he trusted the innate faculty of reason to proceed to operate as freely as it chose upon the ideas thus derived: he sought to make men aware of just what their reason was engaged in doing, but made reason, thus enlightened, "our last judge and guide in everything" (*Essay,* Book IV, chapter 19, section 14). His methodological principles, stripped of the technical accretions in which they were embedded in the *Essay,* were that we should learn docilely from experience, that we should restrain our enthusiasms and passions, that we should distinguish between knowledge of things and knowledge of modes of our own intellectual constructions, that we should be reasonable, that we should not mistake opinion for genuine intuition or demonstration.

On the other hand he finally published an *Essay* of over four hundred folio pages in which he expressed views on dozens of subjects that were characteristic themes of philosophical controversy at the time he was writing. Some of these themes were personal identity, mathematical certainty, arguments for the existence of God, the proper relation of reason and faith, the association of ideas, the

[1] *An Essay concerning the Understanding, Knowledge, Opinion, and Assent.* John Locke. Edited with an introduction by Benjamin Rand. Cambridge: Harvard University Press. 1931. lx + 307 pp.



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passions of the soul, the nature of substance (material and spiritual), degrees of knowledge, substance and essence, the logical status of "first principles," primary and secondary qualities, cause and effect, infinity, liberty and necessity, the relation of understanding and will, the springs of action in human beings. Thus the *Essay* gradually became in Locke's hands much more than a brief statement of the methodology for successful thinking. It became a commentary on many phases of the intellectual life of the century at the end of which it finally appeared.

The contrast between Locke's simple intent and his elaborate achievement is striking. It might give rise to different kinds of treatment. We might ask what it has meant for the subsequent history of ideas. It has meant, among other things, the tying up of the methodological appeal to experience with a conception of experience as a kind of subject-matter, the formation of a "school of empiricism" that has rather exploited the conception of experience than practised an empirical methodology, the commitment of "empiricism" throughout modern times to a dwelling on certain "persistent problems" that form a large part of the controversial material of philosophical discourse. But this line of inquiry would carry us away from Locke himself and has in any case been frequently, and more or less adequately, pursued. We might better ask here what the contrast between Locke's intent and achievement indicates concerning the course of his own intellectual development. Especially should we attempt this latter task because of the new material we now have at our disposal as the result of the publication under the editorship of Dr. Benjamin Rand of Locke's earliest important written discussion of problems of human knowledge. Locke entitled this early writing *An Essay concerning the Understanding, Knowledge, Opinion, and Assent,* and dated the manuscript in his own handwriting 1671.[2] This new material for a study of the development of Locke's

[2] Harvard University Press, 1931. The publication of this manuscript will probably serve to settle one point that a prior volume of source material for Locke under Dr. Rand's editorship threatened to render controversial. This point is the date at which Locke's friends met in his chambers on the occasion which is described in the famous passage in *The Epistle to the Reader* in the *Essay*. For many years historians had been prone to accept the date of 1670–1671 for that meeting. They did so largely on the basis of LeClerc's biography of Locke which said: "In the year 1670, and 1671, Mr. Locke began his *Essay concerning Humane Understanding,* at the earnest request of Mr. Tyrrell, and Mr. Thomas and some others of his friends, who met sometimes in his chamber to converse together, as he himself hath told me" (cf. *The Life and Character of Mr. John Locke,* 1700, p. 8). This statement was based on information sent to LeClerc by Lady Masham, who had gathered much biographical material directly from Locke's own lips (cf. H. R. Fox Bourne, *The Life of John Locke,* vol. I, p. 248, footnote 2). It was confirmed by Lord King's remark that the original copy of the *Essay* was dated 1671 in Locke's own handwriting (*The*

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thought is invaluable. We have now the first draft of what, rewritten "by incoherent parcels" and greatly enlarged, became the *Essay*.

In studying the relation of the draft to the finished *Essay* we should note first the differences of content of the two writings. The draft contains four pages that Locke incorporated in his *Introduction* to the *Essay* (often printed as chapter 1 of Book I), forty-two pages that went into the remaining chapters of Book I, one hundred and fifty-three pages that went into Book II, sixty-five pages that went into Book III, and twenty-nine pages that went into Book IV. Often whole pages of the draft were embodied with only slight verbal changes in the *Essay;* sometimes the revision of the draft was so extensive as to amount to practically fresh material. The subjects treated in the draft and corresponding passages in the *Essay* were the futility of appeal to innate ideas and principles, the origin of all ideas in experience, the distinction between sensation and reflection as two kinds of experience, the development of complex ideas from simple ideas by activity of the mind in sorting and arranging and combining simple ideas, the use and danger of general terms, imperfections and abuse of language, the need of guarding against the error of taking all words to stand for real things, the superiority of present sense-experience to memories of past sense-experience, the impossibility of knowing what lies beyond experience, and arguments for the existence of God. Most of these subjects are fairly closely related to Locke's intent to formulate a methodology for intellectual enterprises; even the arguments for the existence of God can be

*Life of John Locke*, 1829, p. 6), and that the *Essay* was "first sketched out" in 1670 (*ibid.*, p. 32). James Tyrrell put the date down as 1673; but he made this statement in the margin of his copy of the first edition of the *Essay* that appeared years later (which copy is to-day in the British Museum). When Dr. Rand brought out *The Correspondence of John Locke and Edward Clarke* in 1927 he printed a letter written by Locke on December 31, 1686, in which Locke spoke of having been studying problems of knowledge for "five or six years" (p. 177); and he inferred from this passage that the famous meeting in Locke's chambers did not occur until 1681 or 1682 (p. 28). Dr. Rand thus threw doubt on the reliability of the accepted view, and he does not refer in his new volume to his former contention for the late date. Yet he has evidently returned to the accepted view. For he prints a photograph of the sheets on which Locke dated his draft for the *Essay* 1671; and the draft of the *Essay* which he now publishes contains three passages in which the phrase "this present year 1671" or its equivalent occurs (pp. 255, 256, 261). We thus have the best evidence we could wish for the date of 1671 as the date of the elaborate draft which Locke used as the basis of his writing of the *Essay*. And since Locke explicitly denied (cf. *The Epistle to the Reader* in the *Essay*) that he had written systematically on problems of knowledge prior to the meeting of friends in his chambers, we can not plausibly doubt that the meeting of friends was earlier in 1671 or even in 1670. Thus LeClerc's statement is amply justified, and the problem of the date for the inception of the *Essay* is pretty well solved.

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taken as an illustration of how the methodology leads to constructive results.[3]

With that list of subjects it is instructive to compare the list of new topics that Locke did not deal with in 1671 but included in the *Essay* itself. While some of the new material of the *Essay* is but an expansion of what he had said in the draft, a great deal of it is devoted to novel themes. The *Essay* discusses the following new topics: a refutation of Descartes's doctrines that thinking constitutes the essence of soul and extension the essence of body; a definition of some of the passions in a fashion closely akin (but much inferior) to Descartes's; a treatment of the mental powers of brutes that is quite at variance with Descartes's theory that brutes are automata; a restatement of Descartes's distinction between primary and secondary qualities, though in a variant form; a theory of personal identity that is based on a recognition that we can never know the real substance of the soul; a generalized confession that our human faculties are not fitted to give us "a perfect, clear, and adequate knowledge" of substances; an elaborate discussion of our ideas of substances which, though useful to guide practice, are all of them false "when looked upon as representation of the unknown essences of things"; an important distinction between real essence and nominal essence; and a consequent acknowledgment (reluctantly made) that "men can have no ideas of real essence" because "as to real essences of substances, we only suppose their being, without precisely knowing what they are." Furthermore this list should contain practically all the topics of Book IV save the arguments for the existence of God. It should contain the famous definition of knowledge; the distinction between kinds of knowledge and between degrees of knowledge; the endeavor to find a logical basis for knowledge of "real existence" which would prevent the conclusion that "our most serious thoughts will be of little more use than the reveries of a crazy brain"; a hesitant treatment of "sensitive knowledge" which is finally denied to be properly called knowledge and is put down as a matter of "judgment" or probability; and a sceptical conclusion that, however far experimental work may advance useful philosophy, no "science of bodies" is "within our reach." The sceptical conclusion is not consistently maintained. It evidently distressed Locke but was required by a candid handling of the course of the argument.

In studying the relation of the early draft to the finished *Essay* we should next note certain differences in phraseology in passages

[3] If the arguments for the existence of God are so taken, we have a clear proof that Locke never intended to advocate the merely-empirical method which some historians attribute to him. Rather we find that Locke maintained that the materials for reflection come from experience, and knowledge results from the skillful exercise of reason upon these materials.

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that are substantially equivalent in most respects. Many changes in phraseology were doubtless made for literary reasons: happier illustrations were sometimes substituted for less happy ones, and intimate colloquialisms suited to the little group of friends in Locke's private chambers gave place to more dignified prose. But that is by no means all that the attentive reader of draft and *Essay* will note. There is a whole series of changes that reflects a fundamental shift in metaphysical position. A simple but, I believe, a revealing instance of this series of changes occurs when the words "the specific nature" of objects (which occurred frequently in the draft) were deliberately abandoned in the finished *Essay* in favor of "the real essence" of objects. This change is found for instance in the passage in which Locke brought in the illustration of the strange bird in St. James's Park that he called *cassuaris*. The illustration is trivial; but the point it illustrates led Locke to make some important remarks. The point is that familiarity with the correct term to apply to the bird is not equivalent to knowledge of the nature of the bird. If I see a bird, to quote Locke's words, "about three or four feet high, with a covering of something between feathers and hair, of a dark brown color, without wings, but in the place thereof two or three little branches coming down like sprigs of Spanish broom, long great legs, with feet only of three claws, and without a tail,"—if I see such a bird and am informed that the bird is a cassuaris, I should not infer that I have come through possession of the name into knowledge of the entire nature of the bird. Gaining a word leaves me with only so much knowledge of the bird as I had before I gained the word. I may acquire a scientific vocabulary and yet know nothing of what the vocabulary indicates to more trained and tutored minds. In the language of the draft, I know "no more of the specific nature or constitution of that sort of animal than I did before" (p. 154). In the language of the *Essay*, I know "no more of the real essence or constitution of that sort of animals than I did before" (Book III, chapter 6, section 34). And in those two slightly different phrases lies a vast difference in metaphysical viewpoint. In the first phrase the implication is that I do not gain sufficient information about the nature of anything through a first glance at it; that I need more investigation, experimentation, study; that I may have to employ such methods as dissection; that I need wide experience of other things of related species. Yet the implication is further that experience can lead me on to an adequate knowledge of the specific nature of the thing in all its rich variety of qualities and in all its relations to other things. In the second phrase the implication is different. Experience can tell me more and more of what the thing will appear to me to be, but can never disclose what the thing really is in its own nature. The real essence lies beyond the range of any

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possible experience however vast. In the draft Locke contrasted partial or superficial experience with fuller or reflectively controlled experience. In the *Essay* he contrasted appearance inside experience with existence in fact. In both writings the term "experience" is highly equivocal. Yet in the draft, it is always, whatever else it may be, a method of coming into contact with real things. And while it remains such a method in the *Essay* (particularly in passages that follow closely the language of the draft), it also becomes at other times (particularly in passages that are additions to or extensive corrections of the draft) a kind of obstacle to even a theoretically possible direct contact with things.

The same antithesis between standpoints of draft and *Essay* is apparent elsewhere. For example, consider the term "idea." In the draft idea is often almost synonymous with quality. Ideas are said to be in things: they are those qualities of things that are observed. Qualities, in becoming ideas, do not cease to be qualities. So Locke wrote of the "common collection of simple ideas that are constantly found together in many particular things" (p. 155). And though such phrases sometimes get over into the finished *Essay* (cf., e.g., Book II, chapter 23, section 1, which is word for word parallel to a passage on page 120 of the draft), yet the *Essay* avoids them at most points. The more a reader goes on towards Book IV (which is almost wholly new material that was not in the draft), the more ideas become mental states that do not resemble qualities of objects. Thus Locke's scepticism grew. Locke frankly stated in the *Essay* that the collection of simple ideas that experience leads us to regard as belonging together constitute at best but the "nominal essence" of things; and though Locke tried to console himself by thinking that the nominal essence is quite as useful for a guidance of affairs as knowledge of the real essence would be, he is not happy in his conclusion.

Similarly is it with a slight change of phraseology that occurs in the discussion of the existence of God. In the draft Locke wrote that of God's existence "we have a more certain knowledge than anything which our senses have not immediately discovered to us." Or: "His existence is that which we are capable . . . of being most certainly sure of next to our own; or, at least, next to the existence of those things which we have seen and felt ourselves" (pp. 206–207). But in the *Essay* he dropped this language. He was still certain of his own existence and of God's existence; but of the existence of other things he was so much less sure that he can not reinforce proofs of God by calling them as satisfactory as proofs of things present to sense. The "things which we have seen and felt ourselves" have given place to a vaguely conceived external cause of our sensations;

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and even this vaguely conceived cause is postulated to exist as a thing the nature of which can never be known.

Again we find the same antithesis in phrases in which Locke announced the nature of the inquiry on which he was embarking. In the draft Locke wrote that he would not consider his time as misemployed if he succeeded in giving an account of the ways whereby "we come to attain the knowledge of things"; in the *Essay* he changed this to read that he would not consider his time misemployed if he gave an account of the ways whereby "our understandings come to attain those notions of things we have." Then on the next page of the draft he wrote that he would "endeavor to show what knowledge the understanding has by those ideas of the existence of things without us"; but in the *Essay* he omitted the last seven words of this sentence. (Cf. pp. 17 and 18 of the draft, and sections 2 and 3 of the Introduction to the *Essay*.) Again he wrote in the draft (p. 21) that he would show how we "come to knowledge of and certain assent to some general truths, resulting from the consideration of things themselves." But in the equivalent passage in the *Essay* he toned this statement down to the form that he hoped to show "how men may come to that universal agreement, in the things they do consent in" (Book I, chapter 1, section 3). In all these changes, slight in themselves, impressive in their cumulative effect, we find Locke moderating his original confidence in the value of his methodology for ontological purposes and confessing his dismay over the sceptical outcome of his premises. We have not so much knowledge as notions of things; we do not so much get knowledge of things without us as discover relations between our own ideas. Never did Locke in the *Essay* assert that we can hope to have "general truths, resulting from the consideration of things themselves." Rather he said that "general certainty is never to be found but in our ideas," and that "all general knowledge lies only in our own thoughts, and consists barely in the contemplation of our own abstract ideas." These last two phrases (quoted from Book IV, chapter 6, sections 16 and 13) are separated by thousands of words from the other phrases just quoted from opening pages of the *Essay*. But they present the logical implication of the theory of ideas as announced in the draft and retained in the *Essay*. And they betray that Locke's mature reflections had forced him to recognize the necessity of correcting the initial program he expressed in the draft and to restate his intent to conform to his performance. How could Locke retain the confident tone of the draft when, after many years of patient reconsideration of his theories, he had to confess that "we are so far from being admitted into the secrets of nature, that we scarce so much as ever approach the first entrance towards them" (Book IV, chapter 6, section 11)?

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Even in his illustrative material Locke showed in the *Essay* a shift from the type of example he was prone to use in the draft. In attacking innate ideas, for example, Locke said that if men really did have innate ideas these ideas ought to shine out as brightly in their minds as—well, as anything at all of which they were entirely certain. And in the draft he put the point in the form that innate ideas, did they exist, would be as clear and certain as our knowledge "of the sun being risen at noonday." And when three pages further on he wished to give illustrations of propositions that everybody admits as soon as he hears them, he mentioned the propositions that "fire is hot, and ice harder than water" (pp. 50, 53). But in the *Essay* these illustrations are changed. He there wrote that innate ideas, did they exist, would be as bright in our minds as our "love of pleasure and abhorrence of pain"; and he listed as propositions which everybody would admit that "white is not black, a square is not a circle, bitterness is not sweetness" (Book I, chapter 1, sections 27 and 18). Even in such little matters as the illustrations suitable to his position we find that Locke had come to appreciate the sceptical force of his philosophical principles. He was no longer able on his own principles to be sure that the sun was risen at noonday, that fire is hot, or that ice is harder than water. He was now able to be sure only of subjective feelings like pleasure and pain, or of abstract ideas like square and circle, or of ideas of sensation like white and black.

So much, I think, the historian may say concerning the relation of the draft and the finished *Essay* in the matter of philosophical standpoint. If now one proceeds to seek an explanation of the intellectual forces that influenced Locke's gradual development, one enters more speculative territory. Yet the evidence is now sufficient, it seems to me, to re-emphasize and re-state that one potent influence upon Locke's entire intellectual history, from early manhood to closing years, was Cartesianism. Other influences, theoretical and practical, there of course were. But no single influence, I believe, was more potent and more persistent upon Locke's mind than Cartesianism. And since it has been traditional to oppose Descartes as a rationalist and Locke as an empiricist (thus obscuring the empirical elements in Descartes's method and the strong rationalistic elements in Locke, as well as suggesting that the later thinker worked in independence of the earlier), the degree of Cartesian influence upon Locke should be summarized again.

The truth of the matter seems to me to be this. Locke was indebted to Descartes in his student days for what seemed to him a satisfactory escape from decadent scholasticism and took over, with little criticism, certain of Descartes's principles and always retained them as fundamental in his own thinking. He then turned from the

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study of technical philosophical writings and eagerly joined forces with that group of scientific workers who more or less consciously regarded themselves as "Cartesian" in spirit or as developing "the new philosophy" in opposition to "the old philosophy." And then finally, as he became aware of the inherent difficulties of the procedure and assumptions of "the new philosophy," he turned once more to the writings of Descartes for help, reread Descartes carefully, and defined his own position in precise opposition thereto. Even to the end, however, he was unable to criticise Descartes thoroughly enough to reach a position which would enable him to defend the ontological results of scientific research as well as to accept the methodology of scientific procedure.

This hypothesis concerning the degree to which Cartesianism contributed to Locke's intellectual development is complex. It must be considered in three steps. But at the outset it should be noted that Cartesianism is used not only for Descartes's own philosophical and scientific writings but also for the whole European movement of thought that took Descartes as its patron saint and dominating figure. At the time when Locke was a student at Oxford and again during the years when he was revising the draft and composing the *Essay* he read Descartes directly; but in the intervening years he was merely under the influence of the general Cartesian movement that swept over England as over the continent.

The first part of my hypothesis concerns Descartes's early influence on Locke. The evidence here comes from the year just after Locke's death but is, I think, quite reliable for a knowledge of Locke's student days at Oxford. Locke's friend Lady Masham (in whose home Locke spent his declining years and finally died) wrote to the Frenchman LeClerc all that she could remember of Locke's remarks on his own life, in order to help LeClerc compose his brief biography of Locke. Two of her sentences are here important. "I have often heard him say, in reference to his first years spent in the university, that he had so small satisfaction there from his studies, as finding very little light brought thereby to his understanding, that he became discontented with his manner of life."[4] Other remarks by Locke also show that he regarded the peripatetic philosophy taught at Oxford as utterly futile. But some one sent him to the works of Descartes; and in these works he found great delight. As Lady Masham wrote: "The first books, as Mr. Locke himself has told me, which gave him a relish of philosophical things, were those of Descartes. He was rejoiced in reading these, because, though he very often differed in opinion from this writer, he yet found that what he said was very intelligible; from whence he was encouraged to think

[4] Quoted from Fox Bourne's *The Life of John Locke*, Vol. I, p. 47.

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that his not having understood others had possibly not proceeded from a defect in his understanding."[5] And when, just after his student days, Locke visited the continent and was taken to hear a debate by some scholastic monks on *materia prima*, he waxed very mirthful in writing home to a friend about the absurdities of the whole performance.[6] The logic-chopping and subtle distinctions of the peripatetics seemed to him quite without profit or instruction. Descartes by comparison seemed not only clear, but concerned with real issues and productive of genuine knowledge. Locke never classified himself as a follower of Descartes: indeed he expressly asserted in later years that though he "must always acknowledge to that admired gentleman the great obligation of my first deliverance from the unintelligible way of talking of the philosophy in use in the schools in his time," yet he could not properly speak of himself "as the scholar of so great master."[7] Locke's indebtedness to Descartes was perhaps greater than he realized. It was, as he said, for emancipation from scholasticism, encouragement to trust his own powers, and general intellectual stimulus. But it was also probably for the conviction that we should find the seat of certainty in our own ideas rather than in what we take to be things. For while Locke did not use this theory in the dramatic and almost ironical way in which Descartes used it in his *Meditations* as a kind of metaphysical fulcrum, he accepted it wholeheartedly and never ceased to put it down as a central tenet of his thinking. That we should, indeed that we must, begin with our own ideas as the most certain fact we have for philosophical assurance was a useful means with which to combat the various dogmatisms that disturbed seventeenth-century England with their cries of infallibility. So useful a principle Locke would easily take over from the admired author. So it is not surprising to find that among the earliest jottings in Locke's note-books he said that we must begin our search for knowledge with our own ideas. That Locke is directly indebted to his reading of Descartes for this principle can hardly be proved, because he could have gained it from other sources in a century when it was widely professed. But that he so gained it is not improbable; and if he did gain it from other sources, the other sources were quite probably under Cartesian influence.

The second part of my hypothesis is that Locke, though not continuing the study of Descartes so far as evidence is available, moved for most of his life in what we may fairly describe as Cartesian circles. Descartes had been cordially hailed in England as a symbol of "the new philosophy." Whoever was not a peripatetic was of necessity

[5] *Ibid.*, p. 62.
[6] *Cf.* Lord King's *The Life of John Locke*, 1829, p. 20.
[7] Locke's first letter to Stillingfleet, Bishop of Worcester, 1697, p. 103.

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a Cartesian. The issue between "the old philosophy" and "the new philosophy" was drawn with absurd sharpness, as if there were no middle ground or further alternative. To be a Cartesian was not to accept, it was not even to know, all of Descartes's philosophical principles: indeed many who used the name of Descartes as a kind of rallying cry against "obscurantism" read Descartes little or carelessly. To be a Cartesian was rather to desire the spread of experimental science. Summaries of scientific knowledge, like the amusingly amateur works of the Duchess of Newcastle or the more respectable works of Anthony LeGrand, show what in Descartes appealed to many English minds. But with the endorsement of Descartes's contribution to science went many a trace of his more general philosophical principles, notably the dualism of material bodies outside the mind and ideas inside the mind. Indeed most of the scientific movement in seventeenth-century England echoed recurrently the epistemological and metaphysical dualism to which Descartes had given such competent and searching consideration. Leaders of thought at Cambridge and sometimes at the more conservative Oxford and provincial universities joined with workers in the Royal Society and elsewhere to proclaim admiration for Descartes. Henry More, Joseph Glanvill, Simon Patrick, even Cudworth, spoke forcefully for Descartes as the hope of enlightened scientific work and clear thinking. Praise of Descartes became quite rapturous, so extravagantly rapturous that it led to a reaction which, particularly after Sir Isaac Newton, was unduly severe. During the years when Locke acquired interest in methodological problems and drew up the draft of the *Essay* and began to revise the draft, Cartesianism was the progressive and hopeful force for those who were discontented with trivialities and futilities of decadent scholasticism. Though we have no means of measuring the extent of Locke's recognition of Descartes's rôle in this general Cartesian movement,—though Locke never joined in the rapturous praise or the later slurring disregard of Descartes,—he belonged in sympathy and profession to the movement that called itself after Descartes.

Then the third part of my hypothesis is that Locke once again became a reader of Descartes's works and a thoughtful critic of Cartesianism during the last years before he brought the *Essay* to completion and published it in 1690. I conjecture that his return to Descartes's works was due to his growing realization of the implicit contradictions and sceptical implications of the Cartesian methodology and his own initial statement of that methodology. I make this conjecture because such a realization on Locke's part would lead him to seek help once more in the same writings from which he originally derived inspiration and to which he could not help but know the whole scientific movement owed the most competent statement of

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many of its presuppositions. Locke can fairly be said to be the first Englishman whose writings made clear that the theoretical defences of current scientific method and practice contained elements that undermined the ground which these defences sought to protect. Whatever the motive, however, the fact that Locke reread Descartes between 1671 and 1690 can not be doubted. Internal evidence is abundant in the elaborate refutations or qualified acceptances (listed above) which Locke gave to several leading doctrines of Descartes. Thus Locke added to his growing mass of material that became the *Essay* a searching criticism of Descartes on many important points. Evidently, if he had turned back to Descartes for help, he found none there. The man whose writings had stirred him as an undergraduate did not solve the perplexities of his more mature years. If Locke could have agreed with Descartes that whatever we clearly and distinctly conceive is true, he might have made of his *Essay* a consistent dualistic treatise. But Locke was too honest an observer of scientific procedure to defend scientific conclusions on such a ground. And when he rejected this contention by Descartes, the theory of knowledge which he had built up on the basis of suggestions he took from Cartesianism and his own observations of science-at-work broke down into a metaphysical scepticism. That Locke came at last to confess that "no science of bodies" is possible is better evidence of the moral and intellectual candor of the man than of the accuracy of his premises to the facts of scientific experience. Locke's *Essay,* in its successive forms, may therefore be said to indicate both Locke's allegiance to certain Cartesian premises and his final recognition that the Cartesian movement was unable to justify its ontological confidence.

Locke's *Essay* is the most important commentary on Descartes that has ever come from England. The dualism implicit in the draft is exposed in all its implications in the developed *Essay*. This dualism was irrelevant to Locke's intent in writing on problems of knowledge; and once it became his premise, it defeated the realization of his intent. Thus aside from the fact that Locke came to discuss in the completed *Essay* many themes of interest and of controversy in philosophical literature of his time, he gave a review of the merits of Descartes's central philosophical doctrines. The *Essay* became historically the occasion which led subsequent speculations into idealisms, phenomenalisms, subjectivisms, and other -isms which Locke would himself have condemned as new forms of enthusiasm. But taken in itself, the *Essay* is much less of an announcement of future lines of speculation than it is an estimate of the chief intellectual forces in the decades before it appeared.

Too much importance can hardly be assigned, I believe, to the fact that there is almost nothing of the material of Book IV of the

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*Essay* in the early draft (except the arguments for the existence of God which, occurring as they do in Book IV, are yet in tone of assurance utterly different from the tenor of the rest of the Book). In the draft Locke was primarily concerned to stress the doctrine that all the materials for thinking come from experience. But by accident of his historical situation and personal tastes he defined experience as a subject-matter which has a psychological and hence a subjective status. Therefore he came more and more to realize that knowledge, even if it occurs often enough in human life, is for his philosophical standpoint an inexplicable problem. We may put the contrast between draft and *Essay* in several ways. Whereas the draft took more or less for granted that we could get knowledge easily enough if we once got started in the right way, the *Essay* concludes that we can not possibly get any knowledge of nature because of the way in which we have to start. Or, whereas Locke adopted eagerly the methodology of natural science in order to introduce discipline and caution and reserve in matters of theology and politics and social questions, he ended by seeing that the method which would properly restrain men from dogmatism and enthusiasm in theology and politics and social questions would also prevent them from taking the results of natural science ontologically. Or, he strove to adopt the method of natural science for the profit of other affairs; and then generalizing it, he found it collapse in his hands. Doubtless he was happy to find a cure for dogmatism and doctrinaire extravagance; but he was clearly most unhappy to pay as price for this cure a loss of confidence in the conclusions of natural science. A measured scepticism he desired; an unmitigated scepticism he was reluctantly forced to grant. And in whatever way we happen to express this contrast between early draft and finished *Essay* we see that an ironic turn overtakes the history of the development of Locke's thinking. This ironic turn is of significance for the intellectual biography of one of the great thinkers of modern times; it is also of significance as commentary on the hopes and confusions of the great century of which his *Essay* is a major interpretation.

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## REFLECTIONS ON INFINITY

IN this paper I intend (1) to discuss certain familiar difficulties in the traditional notion of infinity; (2) to give a modified interpretation of it, as following from the findings; and (3) to show that there are no real infinite magnitudes.

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It is generally assumed that infinite numbers, if they exist at all, necessarily belong to the arithmetical series. On the other hand, since Kant wrote his famous first antinomy of pure reason, most thinkers concede that infinity can not be reached through the ordinal sequence originating in the first integer; they contend—or, at least, do not see how it can be otherwise—that the natural sequence starting with 1, 2, 3 . . . leads to no infinite number, no matter how long we continue the counting. However, it is obvious that the above statements are incompatible with each other. Indeed, either infinite numbers do not belong to the ordinal series at all; or, finite numbers must suddenly pass, at some moment of counting, into what Cantor called transfinite numbers. But no mathematician will accept such a hocus-pocus without reluctance.

If we start our analysis from the other end, and attempt to descend from transfinite to finite numbers, we meet another set of difficulties. Finite numbers are characterized by the property of containing more terms than any of their parts. But, according to the cardinal definition of the infinite, "a system $S$ is said to be *infinite* when it is similar (aehnlich) to a proper part of itself" (Dedekind, *Essays on the Theory of Number,* p. 63), or, as Russell says, parts of the infinite "have the same number of terms as itself" (*Principles of Mathematics,* I, 368). It follows that we may take one half of the infinite, divide it into as many portions as we please, subtract from it any finite terms, or add to it, multiply it, extract roots,—and still the infinite remains changeless. Why this should be so, is a mystery which few of us are inclined to question. In fact, there even are thinkers who pass into the offensive and, instead of trying to account for this most remarkable property of the infinite, state that the axiom, according to which the whole is greater than any of its parts, holds true for finite collections "precisely *because* they are finite" (Royce, "The Concept of the Infinite," *Hibbert Journal,* I).

The only ways to bridge finite and infinite numbers, in the view of mathematicians, are such as to take a finite number an infinite number of times; or, to divide an infinite system into an infinite number of parts. However, we should draw no hastily conceived conclusions from either of these operations, the more so as it is not easy to see how they are possible at all. For the first of them implies the assumption that infinite numbers belong to the arithmetical series and can, consequently, be taken—which has yet to be proved. I question our right to use the equation $n.I = I$, where $I$ stands for the infinite. The second operation, expressed by the equation $I/I = n$, is evidently a mere transposition of terms, from which some of the mysterious characteristics of infinite numbers have, nevertheless, been inferred. Unless infinite numbers belong to the arithmetical series in every sense of the phrase and unless, consequently,

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they can be reached through the ordinal sequence, the finite and the infinite remain disparate, and the operations created through the study of finite numbers are not applicable to infinite numbers; or, if they are, this has never yet been demonstrated. Mathematicians have, therefore, been consistent—but not necessarily right—insisting on the cardinal definition of an infinite system, as cited above, rather than on the ordinal definition of it. But they should have made one more step and announced that arithmetical operations do not modify infinite numbers, not because such is the property of infinites, but because such operations do not apply beyond the realm of the finite. Then they would not have allowed the regrettable mistake of accepting the two equations supposed to bridge the mutually exclusive systems. They would have said that nobody knows whether or not infinite numbers can be divided, multiplied, or suffer any other mathematical operation; and whether or not $n.I$ is an operation that makes sense.

However, there is even no need of assuming that infinite numbers are transcendent entities. Indeed, it is possible to ascribe to infinites, in general, a negative rather than a transcendent character, using the concept "in correlation and contrast to the finite" (Sir W. Hamilton, *Lectures on Logic,* p. 74). That the arithmetical series has no last number, or, as Royce put it, that no "finite series can exhaust the possible whole number," does not mean that such a series must contain infinite numbers. No matter how long we continue the counting, we meet finite numbers; and there is not a chance that we should thus reach the infinite. The series is endless, but it is neither infinite, nor containing infinite numbers. We do not know whether there are real endless continuities, such as the conceptual space and time are sometimes believed to be, but we are convinced that there are logical continuities, the arithmetical series being an example, which are endless; and, whereas endless physical continuities would almost necessarily imply real and positive infinites, logical endlessness may be purely negative.

Yet few thinkers would agree that infinites are merely negations. To say the least, infinitude is a negative characteristic applicable only to certain arithmetical series and expressing thus their distinction from other series, a distinction which is quite real. However, the nature of the infinites becomes considerably clearer if we regard them as members of the *algebraic* rather than of the *arithmetical* series. Algebra, as is well known, is a science dealing with operations upon mathematical symbols which are indefinites as long as they are not solved and thus transformed into definites. I think that it may be instructive to put algebraic symbols into the form of a series (including both the evanescent and growing sequences) which can be represented as follows: $\ldots 1/I \ldots 1/I,\ 1/I \ldots 1/z,\ 1/y,\ 1/x \ldots x,\ y,$

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$z \ldots I$, $I \ldots I \ldots$ The symbols $x$, $y$, and $z$ may be called *real indefinites*, that is, the indefinites which are, under certain conditions, soluble. The symbol $I$ stands for *infinite indefinites*, that is, the indefinites that are greater than anything to which solutions can be found. And the symbol $1/I$ stands for *infinitesimal indefinites*, that is, the indefinites that are smaller than anything to which solutions can be found.

As soon as we agree to refer infinite numbers to the algebraic series, their seemingly unusual and contradictory properties become intelligible. We need several symbols to represent real indefinites, for, when they are being used in one and the same problem, they, as a rule, stand for different finite numbers. To employ an identical symbol for all real indefinites, would introduce considerable confusion into our problems and prevent us from solving them. Hence we are wont to write $x + 1 = y$, rather than $x + 1 = x$, although $x$ may stand for entirely different numbers in various independent problems. Similar considerations apply to infinite and infinitesimal indefinites. Addition, subtraction, and other mathematical operations do modify them, but, since their solutions can not be found, *it makes no difference* whether we use one or more symbols for these various numbers. In other words, we customarily write $I/n = I$, not because $I$ on both sides of the equation is one and the same, but because in both instances it stands for some infinite indefinite. We use the symbol $I$ for all infinite indefinites, because it is convenient to do so, or because it is superfluous to use more than one symbol. But to assume that all infinite indefinites are *therefore* equal, or that mathematical operations do not modify them, or that an infinite number has as many terms as any of its parts, is the height of absurdity. Whereas the equations $n.I = I$ and $I/I = n$, in which $I$ represents a member of the arithmetical series, are something that defies human reason, the equations $n.I = I$ and $I/I = n$, in which $I$ stands for two different members of the algebraic series, are easily understood, for they mean that one of the $I$'s is $n$ times greater than the other.

Our concepts of real infinites, such as the spatial infinity or eternity (*sempiternitas* or *aeviternitas*) are, whether we know it or not, in close connection with, indeed depend upon, our mathematical notion of infinite numbers. It is, therefore, highly interesting to see what bearing the foregoing reflections can have upon our interpretation of nature. Having recognized the existence of infinite numbers as members of the arithmetical series, our fathers transferred the concept, by mere analogy, into the realm of actual entities. But the assumption, tempting as it may be, is not tenable, for, as soon as we attempt to give real infinites a positive meaning, there arise contradictions which never yet have been, nor probably could have been,

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adequately accounted for. If we are to understand by infinity something negative, a kind of real endlessness, the analogy is not valid, for the simple reason that no negative entities, for all we know, can be ontological entities. Finally, infinity, in the sense derived from the algebraic series, can be applied no better to reality. There are no indefinite realities. Everything that is must be somewhere and at some time, that is, stand in definite spatial and temporal relations to everything else. It is absurd to believe, so far as I can see, in the existence of points of space or moments of time, located infinitely apart. The distance between two real objects certainly can not be equal to a half of the distance. Nor can the interval between two events be equal to a half or a third of the interval. All real distances and intervals are necessarily definite (though they may be relative to the observer), from which fact it seems to follow that all real magnitudes are finite. Human ways of measurement may often be inadequate to give us satisfactory answers to some of our queries. It is obvious that direct experience can solve no problems of infinity and eternity. So it remains for us to rely on reason. But, if we follow its guidance, I do not see how we can avoid the admission that, in all probability, we are living in the finite universe.

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## BOOK REVIEWS

*Six Theories of Mind.* CHARLES W. MORRIS. Chicago: University of Chicago Press. 1932. vii + 337 pp.

Professor Morris's volume is a discussion of theories of mind from the standpoint of functionalism: mind equals symbolic functioning. Not six, but about thirty-six theories are discussed. These are classified, not always with perfect justification, under six heads: substance, process, relation, intentional act, substantive, and function. Beginning with primitive conceptions of mind, the discussion proceeds through classical Greek and modern theories to contemporary thought. Some of Professor Morris's discussions of contemporary thinkers were submitted before publication to the authors themselves: e.g., Russell, Strong, Lovejoy, Laird, Dewey. Comments by these authors are included as footnotes to the text, and two and one half pages of the text are given over to a brief re-statement by Russell of his analysis of mind. An extra effort to be fair to opposed views is made throughout.

The volume is preponderantly critical. Nearly five-sixths of it are devoted to pointing out the limitations of non-functional theories of mind, particularly those of dualism, idealism, intentionalism, and new and critical realism. No summary of this wealth of interesting

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criticism is possible in a brief review. But it may be said that, to the reviewer at least, these critical portions seemed not only scholarly and fair, but, for the most part, sound and penetrating, if not always decisive.

Equal praise, I think, can not be given to the final sixth of the volume, which contains a positive exposition of Professor Morris's own theory of mind. This exposition, which is based largely on the writings of Professor Dewey, is admittedly incomplete, since a general theory of symbolism and its application to the nature of mind are reserved for a later volume. Perhaps it would be futile, not to say unfair, even to attempt to pass judgment on the theory in its present form. In what follows, I intend to take up several points which are peculiarly puzzling in the present exposition, but not to come to full critical grips with the central thesis of Professor Morris's doctrine.

The identification of mind with symbolic functioning (vii) is, I think, too narrow. Mind is more than its representational power. It has, for instance, an evaluative side. And any discussion of mind which pretends to be comprehensive must take account of this activity of estimating, as well as the activity of representing. Professor Morris is apparently interested wholly in epistemological questions, in the problems of givenness and objectivity and transcendence, not in the problems of desire and personality and spiritual growth. This is very well. But, then, the title of his book should have been, Six Theories of Mind as Cognitive, and some recognition should have been given the fact that there is more to mind than merely the activity of symbolizing the absent.

One is puzzled, in the second place, about the locus of mind. Statements such as the following occur: mind is the symbolic functioning of events that are not intrinsically mental (p. 276); mentality is the function of indicating other events (p. 296); meaningful events are mental events. Such statements leave the impression that if any event at all functions symbolically, as the sign on the highway, or the blackish gray of a storm cloud does, it possesses mentality, or mind. Such a view seems hardly superior to new realism, not to mention pan-psychism, but the point is that, despite its reiteration, it does not seem to be exactly what Morris means to say about the locus of mind. In one place, indeed, it seems to be simply denied (p. 261); whilst earlier in the volume (pp. 201, 158), statements are made which leave the impression that mentality is not so much a property of symbolizing events, as of subject-symbolizing-event-object. It is an emergent character of the total cognitive situation. In the meantime, one is further puzzled because one finds, in this professedly naturalistic account of mind, little or nothing said about what one supposes is the most natural view of the

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locus of mind; viz., that mind is simply a complex characteristic, not of sign-posts or of subject-symbolizing-event-object, but of intelligent organisms.

One difficulty has to do with emergence. Emergence, although mentioned frequently, is nowhere defined, so one must suppose it means what it does for its most distinguished interpreters, Morgan and Alexander. The difficulty arises when Professor Morris defines physical objects as qualitied objects, and components of qualitied objects as physical: e.g., mentality as a component of a physical sign-post, or of a physical organism, or of whatever in nature it is a component of, is physical (p. 243). Such a definition, equating physical existence and all existence, seems to negate the whole point of the emergence doctrine, which, at least in its authoritative form, holds that the physical is merely one of several levels of existence, that there are other levels qualitatively above the physical, and that the idea of emergence at long last provides a key for understanding satisfactorily the mode of genesis of the so-called higher from the so-called lower. If all reality is simply physical, and if all that qualifies anything is merely a physical quality, there can be no genesis of higher out of lower, and the whole emergent hierarchy, as well as the point of emergence as a principle explaining the mode of origin of levels of novel quality, in short, emergence in its accepted sense, becomes meaningless.

There are a number of other difficulties. For instance, Professor Morris accepts "the definition of truth as 'processes of change so directed that they achieve an intended consummation'" (p. 310). But the statement in this sentence, quoted from Professor Dewey, no more accurately defines truth, I think, than it defines a successful battle-manoeuvre, a beautiful stage-production, or a skillful robbery. In general, in the sixth chapter, which, as I have said, contains Professor Morris's own theory of mind, there seems to me to be a rather complete lack of that fine critical independence which so markedly distinguishes the five preceding chapters. Professor Morris, I venture to say, simply does not see Professor Dewey's doctrines critically, I mean to say, philosophically.

The preceding remarks express a few random dissatisfactions that the reviewer has felt in reading over the present undeveloped exposition of Professor Morris's theory of mind. No doubt, the fuller exposition can cancel them all out. In the meantime, the critical portions of the present volume, its solid bulk, remain and constitute, on the whole, an interesting and brilliant piece of work, adequately showing that there is place for an approach to mind different from those discussed there.

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*The Open World.* HERMANN WEYL. New Haven: Yale University Press. 1932. Pp. 84.

This book consists of three lectures on the metaphysical implications of science, more specifically of mathematics and physics.

In contrast to the pragmatic and sceptical philosophies of science, Professor Weyl does speculative metaphysics in the grand manner. The title of the lectures, *The Open World,* conveys his view that our world points beyond itself to a transcendent realm. The essence of his philosophical position is given in the following statement, "The beginning of all philosophical thought is the realization that the perceptual world is but an image, a vision, a phenomenon of our consciousness; our consciousness does not directly grasp a transcendental real world as it appears." Idealism and realism are both one-sided. "In the transition from consciousness to reality the ego, the thou and the world rise into existence indissolubly connected and, as it were, at one stroke."

The world is revealed as an order of mathematical law. "But this ultimate foundation for the ratio governing the world, we can find only in God; it is one side of the Divine Being." Professor Weyl rejects the method of mysticism. "But in our knowledge of physical nature we have penetrated so far that we can obtain a vision of the flawless harmony which is in conformity with sublime reason. Here is neither suffering nor evil nor deficiency, but perfection only." In the mathematical construction of a field of possibilities which is open to infinity, and in the theoretical, symbolical construction of the world in physical science, mind is open toward the infinite. God, as the completed infinite, can be represented only in symbols.

In addition to the speculative metaphysics and theology the book contains illuminating comments on historical cosmologies, contemporary physics, and scientific methodology.

In the first lecture, "God and the Universe," the author opens his subject with a scholarly historical sketch of the influence of mathematics and cosmology upon theology. He comments with critical understanding upon the views of Pythagoras, Plato, Aristotle, Ptolemy, Dante, Copernicus and his successors. Of especial interest is the author's interpretation of Nicolaus of Cusa, in whom he finds an anticipation of modern ideas. The first lecture also includes an historical sketch of the concept of the ether from the Stoics down to the theory of relativity.

The second lecture, "Causality," is of great value to the student of the methodology of physics. The author does not think that the positivistic analysis of causality in terms of determination by law is wholly adequate; the concept of causality also expresses the meta-

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physical notion of ground of determination. Following Leibniz he believes that the essence of causality is apprehended in the activity of the self. This lecture, however, is largely devoted to an analysis of the concept of law. Despite the author's adherence to what the positivists call the "School Philosophy," there is ample recognition of the operational analysis of physical concepts. Thus he asserts that the meaning of a physical quantity is bound to the method by which it is measured. "We do not find but enforce the general principles of natural knowledge." The implicit definition of the characteristics of objects is bound to these laws. "The proposition 'Under the same circumstances, the same results will hold,' is not something verifiable by experience, but a norm whose validity we enforce in building up our experience." Professor Weyl especially seeks loopholes in the doctrine of determinism in order to find a place for the freedom of the will. He is reluctant, however, to decide at this time the positive contribution of the quantum theory to this problem.

In the final lecture, "Infinity," the author relates the history of the opposition between continuity and atomism, he expounds the construction of the number system, and discusses the problems raised by the infinite in contemporary philosophy of mathematics.

V. F. Lenzen.

University of California,
Berkeley.

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## JOURNALS AND NEW BOOKS

Scientia. Vol. LII, N. CCXLVIII–12. Le terre rare nelle atmosfere stellari: *L. Rolla.* Le relief sous-marin d'après les récents sondages: *C. Vallaux.* The Colloid Chemistry of Protoplasm: *L. v. Heilbrunn.* The Origin of the Flowering Plants: *A. C. Seward.* Einige Bemerkungen zu Goethe's Aufsatz "Der Versuch als Vermittler von Objeckt und Subjeckt": *H. Freundlich.*

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Hehlmann, Wilhelm: Metaphysik und Phänomenologie der Erziehung. Halle a. S.: Max Niemeyer. 1932. 47 s. 1.80 M.

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## NOTES AND NEWS

We regret to announce that Flora I. MacKinnon, Associate Professor of Philosophy at Wellesley College, died on December 11 at Wellesley, Mass., after a short illness from pneumonia.

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At the Eighth Annual Meeting of the American Catholic Philosophical Association, which will be held at the Sacred Heart Seminary, Detroit, December 28 and 29, the general subject will be "Current American and British Realism." At the afternoon sessions there will be Round Table Discussions in several divisions on the subjects of Epistemology, Philosophy of Nature, Philosophy of Mind, Ethics. The two morning sessions will be devoted to the reading of the following papers:

DECEMBER 28.

Present Scholastic Problems of Realism.....*Edward F. Talbot*
Realism and the New Physical Theories.....*Augustine Osgniach*
Psychological Aspects of Current Realism.....*John E. Burns*

DECEMBER 29.

The Essential Features of Critical Realism.....*John S. Middleton*
The Organic Realism of Whitehead.....*Joseph A. Schabert*
Current British Realism.....*William J. O'Meara*
Anti-Realistic Tendencies.....*Daniel C. O'Grady*

The Presidential Address will be delivered at the Annual Dinner on December 28 by James A. McWilliams.

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